



Practice Guidelines

For Family Physicians

Volume 4

Message from His Excellency

Prof. Dr. Hatem El Gabaly

Comprehensive development and modernization is one of Egypt's priorities and pursued objectives. Out of this rule, we are committed towards improving the quality of health care services available for all Egyptians; adults, children, the poor and the well-off.

The Ministry of Health and Population has adopted, as a top priority, developing current systems to provide and finance health services in guidance and vision of the political leadership to ensure high quality in service provision and meet needs and expectations of the population as well as keeping up with top-notch developments at all levels - primary, preventive, curative, diagnostic and rehabilitation.

This vision has been translated into a promising and ambitious Five Years Plan to institutionalize the Health Sector Reform Program on the national level. The plan is focusing on implementing the Family Health Model at all primary health care facilities in the 27 Governorates.

Our dream has been realized into a competent program of Health Sector Reform aiming to provide every person with high quality health services. These include physical, psychological and social welfare, which translate into high production and progress for our cherished Country, Egypt.

I am delighted to introduce to one of the important publications for the Sector of Technical Support and Projects, representing a great team effort "**The Practice Guidelines for Family Physicians**" for the family physician at all Family Health Unites of MOHP Distributed all over the Country .

Prof. Dr. Hatem El Gabaly

Minister of Health and Population

Preface

The Ministry of Health and population is working diligently to achieve equal and available quality health services for all citizens of Egypt. Our objective is to shape national policies for the goal of advancing health care delivery in all parts of the country.

Six years ago, the Ministry has adopted new policies and strategies in order to provide basic health services of high quality for all citizens in the framework of the Family Health Model. This has led to introducing new financing mechanisms that ensure the sustainability of finance and resources, and availability of affordable services along with effectiveness and efficiency of these services.

Having made situational analysis in details, highlighting points of weaknesses and strengths and defining actual needs, strategic plans were subsequently developed putting into practice the reforming infrastructure and human resources as well as partnerships between governmental, private and national sectors.

It gives me great pleasure to present this document. This system is in continuous reform, progressing incrementally, refining the knowledge base, and modifying concepts. This document is not the end product, but rather the first step of many others.

However, I hope it will help us towards our ultimate goal of a quality, effective, efficient, evidence based service to all Egyptians irrespective of geographical or social economic barriers.

The document is a collaborative work of the Ministry of Health and Population staff, and the Sector for Technical Support and Projects on both central and peripheral levels. Work in this document is subjected to continuous assessment, operation research, many of the issues presented in this document will be updated in further version.

Dr. Emam Mossa
Undersecretary of the Sector for
Technical Support and Projects

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Abbreviations and Acronyms

BACTEC	: Detection of Metabolic End Products of TB Bacilli
BCG	: TB vaccine
DOTS	: Directly Observed Treatment With Short Course Chemotherapy
E	: Ethambutol
H	: Isoniazide
MDR	: Multiple Drug Resistance
NGOs	: Non Governmental Organizations
NTP	: National Tuberculosis Program
PAL	: Practical Approach to Lung Health
PCR	: Polymerase Chain Reaction
PHC	: Primary Health Center
R	: Rifampicin
S	: Streptomycin
TB	: Tuberculosis
Z	: Pyrazinamide

**Communicable
Diseases
DOTS/ Treatment
of
Tuberculosis**

1

Communicable Diseases

1. DOTS/ Treatment of Tuberculosis

DOTS Treatment of (T.B)

Tuberculosis

Definition

Transmission

Role of The F.H.U and Center

National Tuberculosis Control Program Services Delivery Chart

Diagnosis

Case Definition

Standardized Management Plan For TB Suspect

Standard Code for TB Treatment Regimens

Treatment Regimens in Special Situations:

- Pregnancy
- Breast feeding
- Oral contraception
- Hepatic insufficiency
- Acute hepatitis
- Diabetes mellitus
- Renal failure
- HIV infection

Monitoring of treatment of T.B

Treatment outcome

Adverse reaction and their management

Adherence to treatment

Recording

Reporting

Multi-drug resistant cases

T.B in children

- Factors determining the epidemiology
- Investigations
- Score system
- Treatment

Preventive chemotherapy

Health education

Preventive measures:

- General
- Specific

PAL

Tuberculosis

Definition

It is an infectious disease caused by Mycobacterium Tuberculosis or Mycobacterium Bovis.

Transmission:

Inhalation: most common

Ingestion: contaminated milk

Cutaneous: no epidemiological study

Mother to Fetus: transplacentally aspirating amniotic fluid

When to Suspect TB:

- Persistent cough > 2 weeks
- Blood stained sputum
- Breathlessness and chest pain

General symptoms:

- loss appetite & loss weight
- Malaise & tiredness
- Night sweat & night fever
- History of contact with TB patient
- Sharp angular deformity of the spine
- Chronic diarrhea

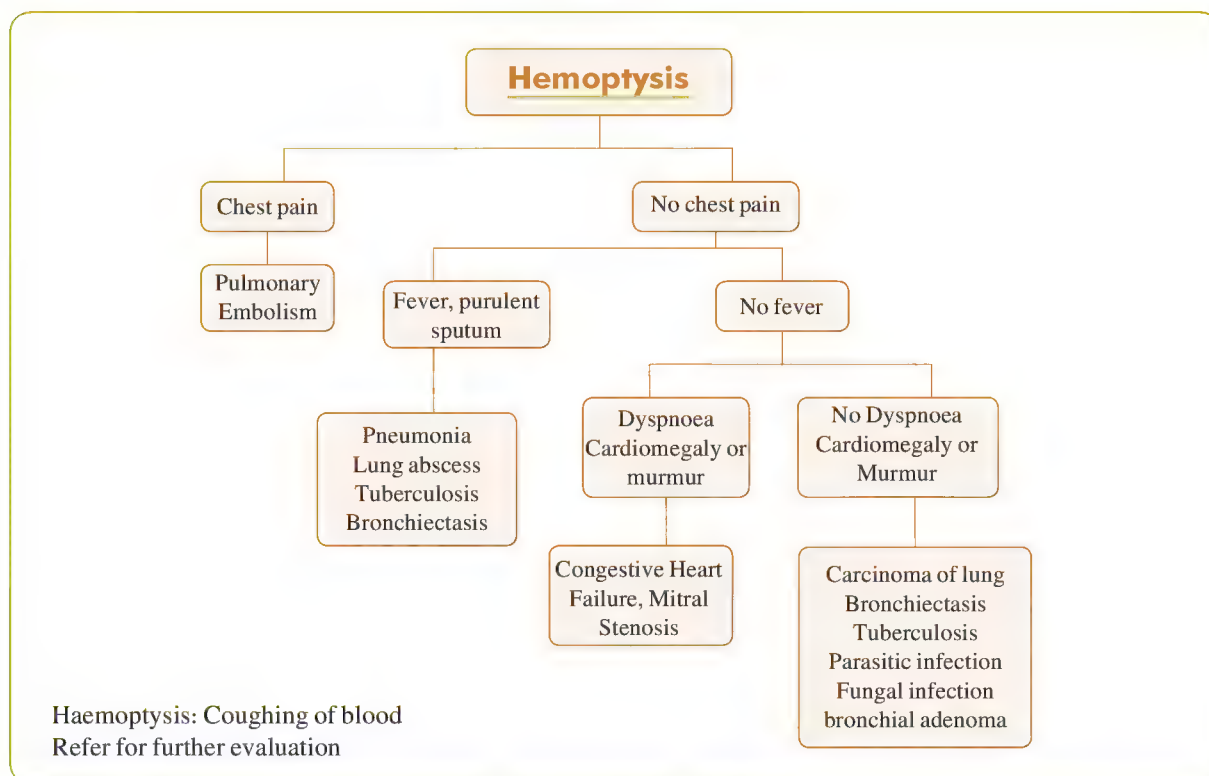


Figure "1": Flow Chart Diagram For Differential Diagnosis of Hemoptysis

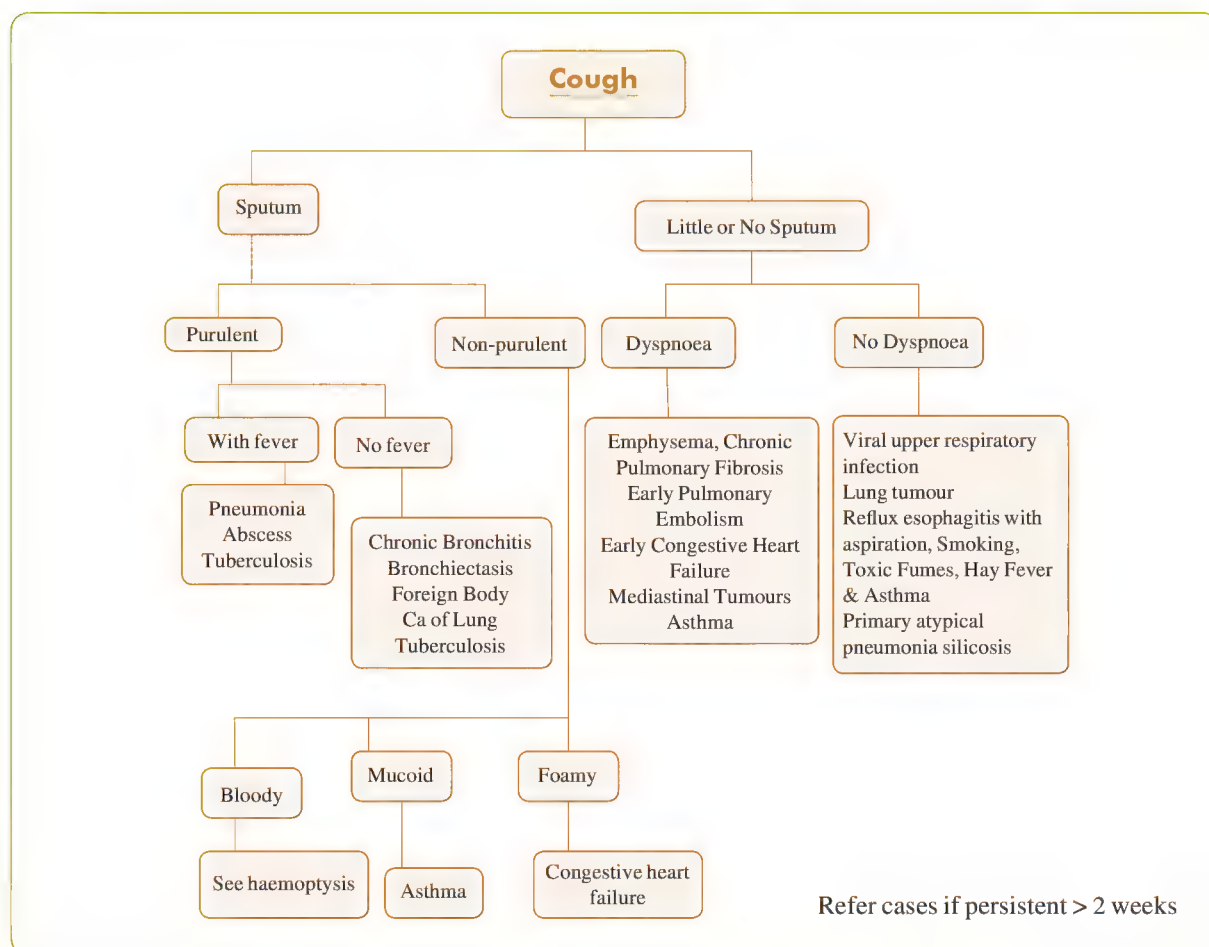


Figure "2": Flow Chart Diagram For Differential Diagnosis of Cough

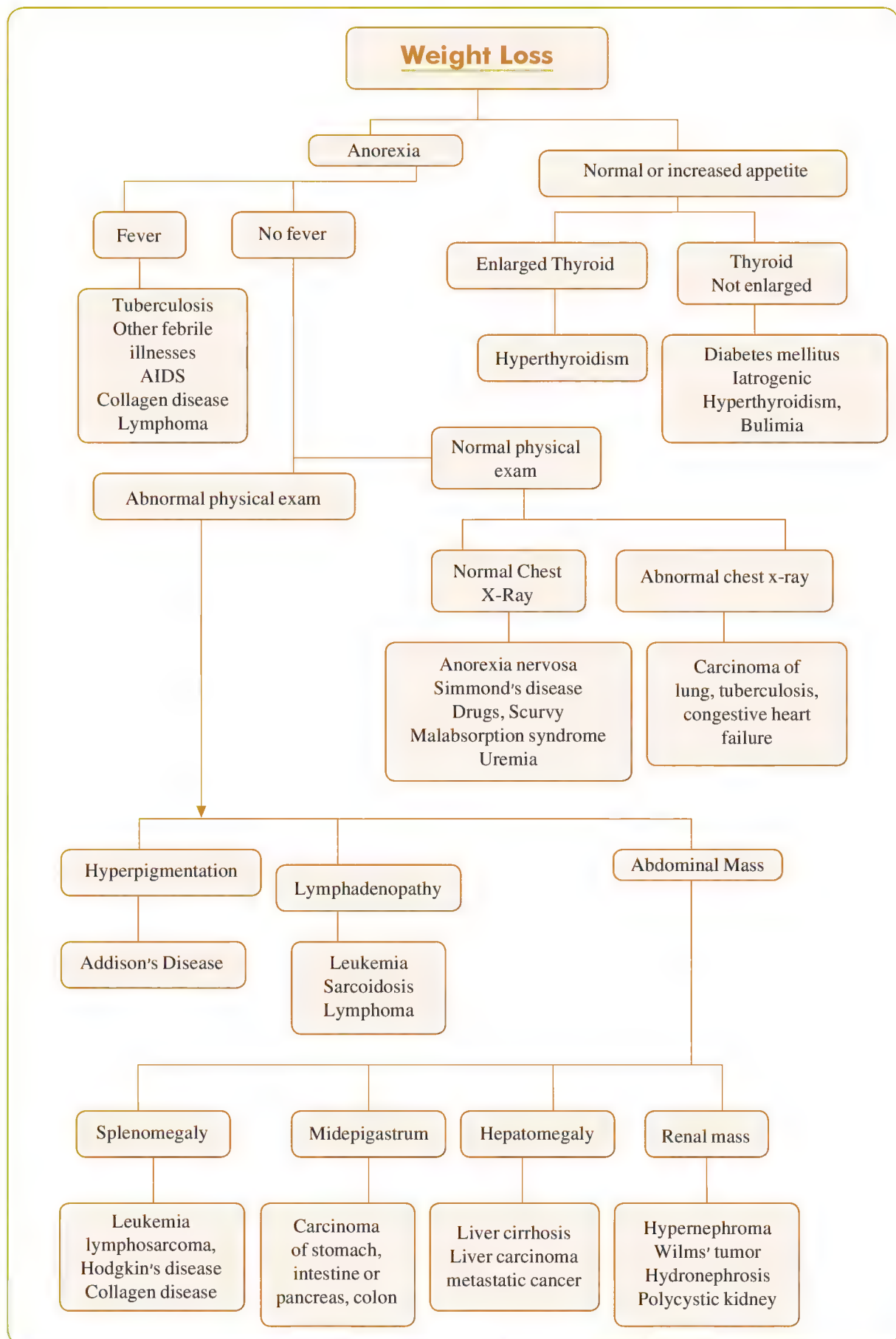


Figure "3": Flow Chart Diagram For Differential Diagnosis of Weight Loss

Role of the F.H.U. and Centre:

- Provide TB patients with daily supervised treatment with anti-TB drugs according to prescribed regimen, dosage and duration.
- Provide patients, who are unable to attend at the PHC centre on a daily basis (e.g., handicapped patients) with supervised treatment at the patient's home.
- DOT at the patient's home, if necessary.
- Retrieve patients who did not attend the PHC centre for their daily treatment.
- Record daily attendance and anti-TB drug intake in the TB treatment card.
- Health education and counselling to TB patients, their contacts and the community.
- Timely referral of TB patients to the chest clinic for follow up sputum examination.
- Order and collect the required quantity of anti-TB drugs for TB patients.
- Ensure that the anti-TB drugs present in the unit are not expired.
- Prepare monthly reports to chest clinic on:
 - o No. of TB patients treated at PHC centre;
 - o Amount of drugs administered;
 - o Balance of drugs
- Refer contacts of TB patients to chest clinic.
- Refer TB suspects to chest clinic.

National Tuberculosis Control Programme Service Delivery Chart

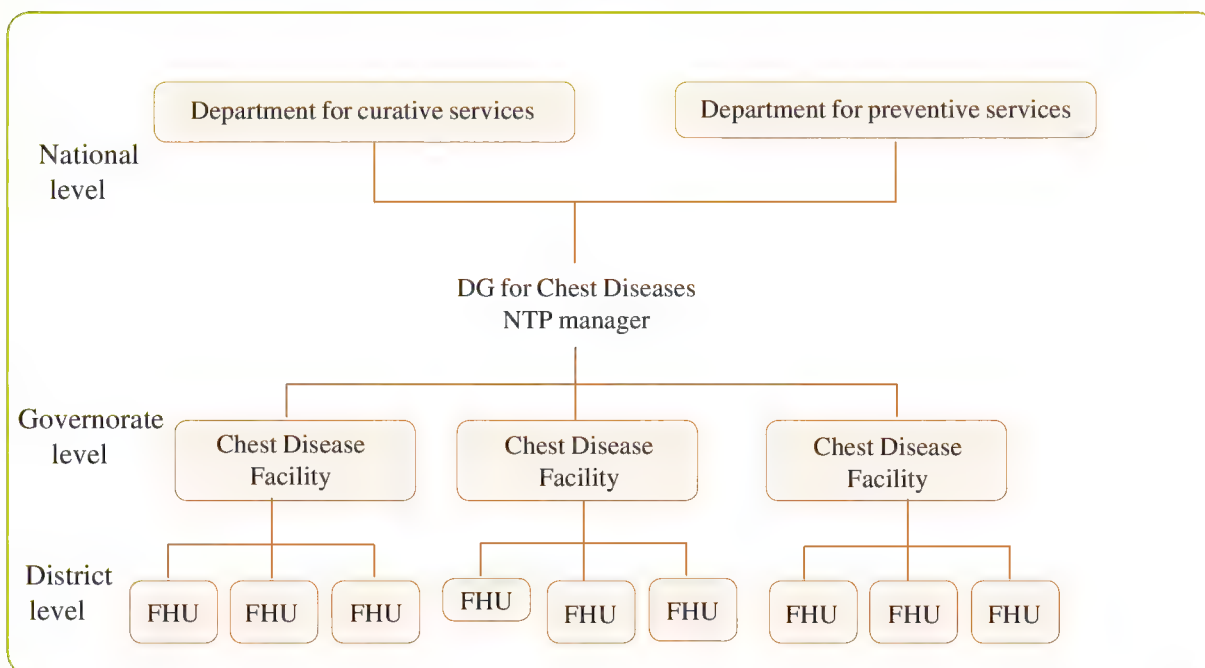


Figure "4": Flow Chart Diagram For Services Delivery of Tuberculosis

Diagnosis

Diagnosis of Tuberculosis

Routine sputum collection:

Day 1 sample 1 - Patient provides, under supervision, an "on-the-spot" sample when he presents to the health facility

B) Patient gets a sputum container to take home for an early-morning sample the following morning

Day 2 Sample 2 - Patient brings an early morning sample
Sample 3 - Patient provides another "on the spot" sample under supervision

NB: If a patient is unable to produce a sputum sample, a nurse may help him to give a good cough and bring up some sputum. This must be done in a well-ventilated area, preferably in the open air.

Value and Role of Diagnostic Tools for Pulmonary TB

A) Bacteriology:

1. Detection of TB bacilli

- Direct smear microscopy stained by the Zeil-Neelsen
- Cultures: it takes 4-8 weeks
- Allows study of anti TB bacilli

2. Detection of immune response of TB bacilli:

Tuberculin Test:

0.1ml of tuberculin is injected intradermally, induration is measured after 48 to 72 hours $\geq 10\text{mm}$ = positive

→ previously vaccinated if not vaccinated → consider TB infected person

Negative → no TB infection or false negative

False Negative

Host Factors

- Acute or overwhelming tuberculosis.
- HIV infection and other immune-suppressive diseases (lymphoma, etc.)
- Viral infections (e.g., Measles, Mumps, Varicella)
- Live virus vaccination (e.g., Measles)
- Renal failure.
- Malnutrition.
- Sarcoidosis.

Factors Related to Testing Procedure

- Improper storage of PPD
- Improper dilution.
- Subcutaneous injection.
- Lack of experience in interpretation

3. Histo-pathological diagnosis of TB

4. BACTEC

5. PCR

NB: 3, 4 & 5 not in FHU

B) Radiography

No chest x-ray pattern is absolutely typical of pulmonary TB

What is a Case of Tuberculosis?

A patient in whom TB has been bacteriologically confirmed or diagnosed by a clinician.

The purpose of case definition is:

- Proper patient registration and case notification
- Prioritized treatment of sputum smear-positive cases, the main sources of infection in the community
- Allocation of cases to appropriate standardized treatment regimens
- Evaluation of the proportion of cases according to site, bacteriology and treatment history
- Cohort analysis of treatment outcomes

Why match standardized treatment regimen to diagnostic category?

The reasons for matching standardized treatment regimen to diagnostic category are:

- To avoid under-treatment of previously treated cases and therefore to prevent acquired resistance
- To maximize cost-effective use of resources and to minimize side-effects for patients by avoiding unnecessary over-treatment

What determines case definition?

The four determinants of case definition are:

- Site of TB disease.
- Bacteriology (result of sputum smear).
- Severity of TB disease.
- History of previous treatment of TB.

Diagnostic Classification of Tuberculosis

A) Definitions of Pulmonary Tuberculosis

1. Smear-positive pulmonary TB

- A sputum smear-positive pulmonary TB patient is defined in one of three ways
- A patient with at least **two** sputum specimens positive for acid-fast bacilli by microscopy
- A patient with at least **one** sputum specimen positive for acid-fast bacilli by microscopy, and radiographic abnormalities consistent with pulmonary TB, and a decision by a physician to treat with a full course of anti-TB chemotherapy; or
- A patient with at least **one** sputum specimen positive for acid fast bacilli by microscopy, which is culture positive for *M. tuberculosis*

2- Smear-negative pulmonary TB

- Two sets (taken at least 2 weeks apart) of

at least **two** sputum specimens negative for acid-fast bacilli on microscopy and radiographic abnormalities consistent with pulmonary TB and a lack of clinical response despite one week of a broad-spectrum antibiotic and a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or,

• **A patient who fulfills all of the following criteria:**

- o severely ill and at least two sputum specimens negative for acid-fast bacilli by microscopy and radiographic abnormalities consistent with extensive pulmonary TB (interstitial or military) and a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or, A patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive; or,
- o A patient whose initial sputum smears were negative and is diagnosed positive for acid-fast bacilli by other diagnostic means.

B) Definition of Extra-Pulmonary Tuberculosis

- A patient with clinical and/or radiological and histological evidence consistent with active extra-pulmonary tuberculosis and a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
- A patient with at least one culture specimen from an extra-pulmonary site positive for *Mycobacterium tuberculosis*.

The Following Definitions Are Used:

- **New:** A patient who has never had treatment for TB or who has taken anti-tuberculosis drugs for less than 1 month.
- **Relapse:** A patient previously treated for TB who has been declared cured or treatment completed, and is diagnosed with bacteriologically positive (smear or culture) tuberculosis.

- **Treatment after failure:** A patient who is started on a re-treatment regimen after having failed previous treatment.
- **Treatment after default:** A patient who returns to treatment, positive bacteriologically, following interruption of treatment for 2 months or more.
- **Transfer in:** A patient who has been transferred from another TB register to continue treatment.
- **Other:** All cases that do not fit the above definitions. This group includes chronic case, a patient who is sputum-positive at the end of a re-treatment regimen.

Note

Smear-negative pulmonary and extra-pulmonary cases may also be relapses, failures, returns after default or chronic cases. This should, however, be a rare event, supported by pathological or bacteriological evidence (culture).

Case Finding

Case finding policy

A) Passive Case Detection

Individuals who have symptoms and who seek health care.

B) Active Case Detection

The health services go to the community to detect TB cases;

1. Contacts of pulmonary TB patients.
2. Individuals who are in need of a health certificate.
3. Other risk groups:
 - Health staff, especially laboratory staff dealing with sputum examination.
 - Closed communities, e.g. army, prison, etc.
 - Patients with immuno-suppressive diseases, e.g., diabetes, renal failure, HIV infection.
 - Patients under immuno-suppressive treatment, e.g., corticosteroids, anti-cancer therapy.

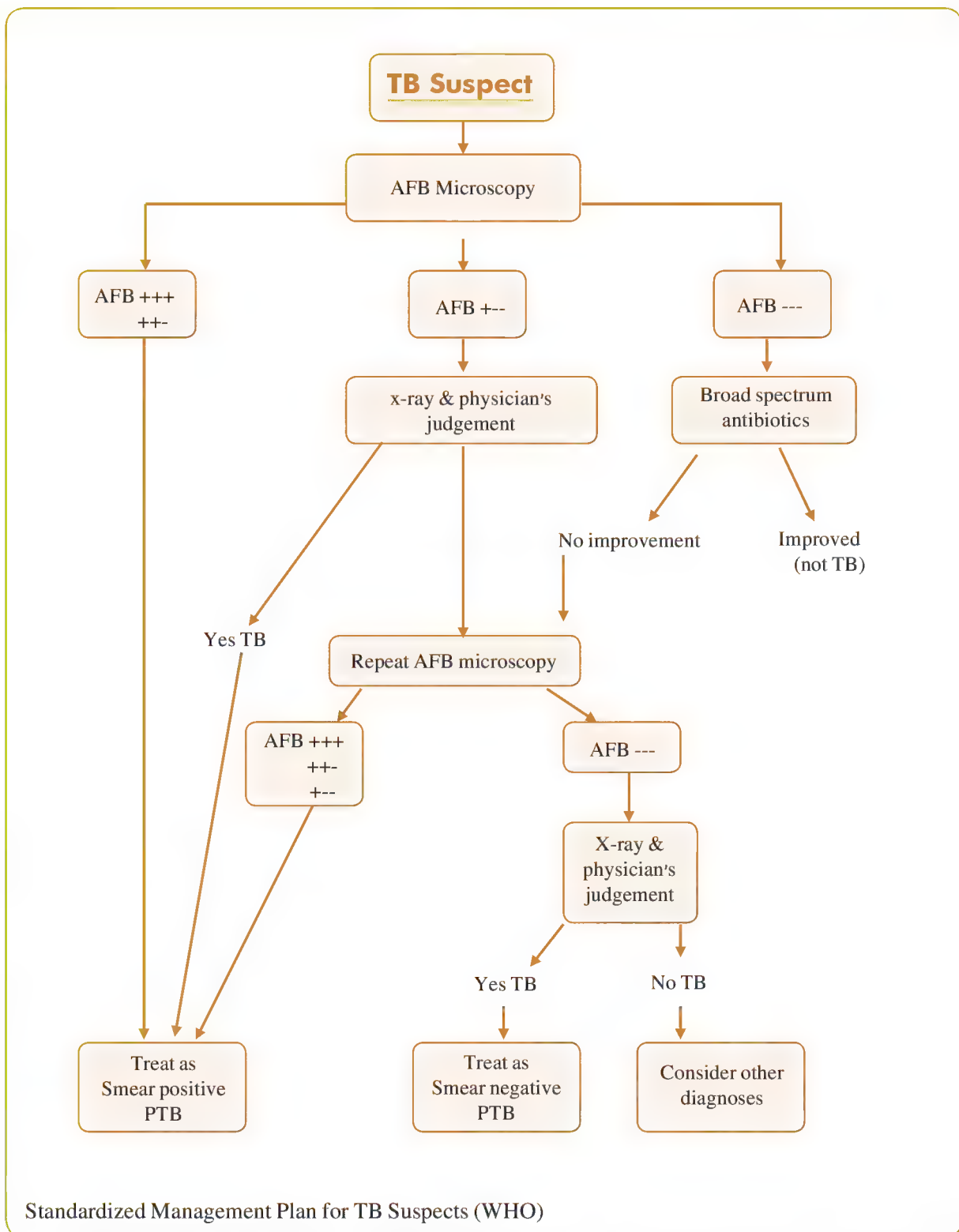


Figure "5": Flow Chart Diagram For Standardized Management Plan for TB Suspects (WHO)

Standard Code for TB Treatment Regimens

The number before a phrase is the duration of that phase in months.

A subscript number after a letter indicates the number of doses of that drug per week.

If there's no subscript number, treatment is daily.

Table.1: Standard Code for TB Treatment Regimens

Tb Diagnostic Category	Tb Patients	Tb Treatment Regimens	
		Initial Phase	Continuation Phase
I	New smear-positive patients; New smear-negative PTB with extensive parenchymal involvement; or severe forms of EPTB	2 HRZE	4 HR
II	Previously treated sputum Smear-positive PTB: - relapse; treatment after interruption; or treatment failure	2 HRZES/1 HRZE	5 HRE
III	New smear-negative PTB (other than in Category I); or Less severe forms of EPTB	2 HRZE	4 HR
IV	Chronic and MDR-TB cases (still sputum - positive after supervised re-treatment)	Specially designed standardized or individualized regimens are suggested for this category	

- Direct observation of drug intake is required during the initial phase of treatment in smear-positive cases, and always in treatment that includes Rifampicin.
- Streptomycin may be used instead of Ethambutol. In meningeal TB, Ethambutol should be replaced by Streptomycin.
- Whenever possible, drug sensitivity testing is recommended before prescribing treatment in failure cases.
- Contacts of patients with culture-proven MDR-TB should be considered for early culture and sensitivity testing.

Treatment Regimens in Special Situations

There are a number of special conditions in which different treatment options should be advised. The most important of these conditions are mentioned below.

Pregnancy

A pregnant TB patient should not stop her

treatment since the growing foetus is more endangered by untreated TB of the mother than by a correctly prescribed treatment. However, streptomycin should not be administered during the first trimester of pregnancy, because of the possible damage of the 8th cranial nerve. The recommended regimen for pregnant TB patients is: 2HRZ/ 7HR

Breastfeeding

A breast-feeding woman with TB should receive a full course of anti-TB drugs. All anti-TB drugs are compatible with breast-feeding and the woman can safely continue to breast-feed her baby (See also Tuberculosis in Children).

Oral Contraception

Rifampicin interacts with oral contraceptive medications with a risk of decreased protective efficacy against pregnancy. A woman receiving oral contraception may choose between two options while receiving treatment with ethambutol: following consultation with a clinician, an oral contraceptive pill containing a higher dose of estrogen (50µg) may be taken, or another form of contraception may be used.

Hepatic Insufficiency

Patients with liver enzymes that do not exceed double the normal value should receive the treatment regimen recommended for their case definition.

Rifampicin may need to be stopped if the liver enzymes are raised after starting the treatment.

Patients whose liver enzymes reach more than double their normal value after the start of treatment or, whose liver enzymes are constantly elevated after the start of treatment, should receive a treatment regimen with 2SHE/10HE.

Under no circumstances should pyrazinamide be given to patients with active liver disease.

Acute Hepatitis (E.g., Acute Viral Hepatitis)

The Combination of Streptomycin and Ethambutol is the safest option until the hepatitis has resolved and can be given up to a maximum duration of three months. The patient can then receive a continuation phase with 6HR, as long

as liver enzymes and serum bilirubin are within normal values and sputum smears are negative. If not, a continuation phase with 10 HE is recommended.

Diabetes Mellitus

In the presence of TB diabetes becomes more difficult to manage, as is the case with other chronic infectious disease. Once TB treatment is started the management of diabetes becomes easier.

Therefore, patients with diabetes and TB should be given treatment regimens according to their case definition.

Renal Failure

Patients with renal insufficiency should be followed by renal function tests. Take into consideration that isoniazid and pyrazinamide have cumulative effects. Patients with renal insufficiency should not be given ethambutol and streptomycin. For patients with impaired renal function the recommended regimen is 2HRZ/7HR.

HIV Infection

HIV Infection and TB (see also Chapter TB and HIV)

HIV positive patients with TB should not be given thiacetazone. Also streptomycin should, preferably, not be included. The recommended regimen is 2EHRZ/ 10 HE. Infection with atypical *Mycobacteria* is common in HIV positive patients, e.g., *Mycobacterium Avium* Complex, which will not respond to the anti-TB drugs used.

Monitoring of Treatment

- Monitor the sputum smear examination results at regular intervals during treatment, usually at the end of the second month (end of third month for retreatment cases); end of the fifth month, and at the end of treatment after six or eight months, depending on the type of treatment.
- In the areas implementing DOTS, monitor the drug intake for patients who are on daily supervised treatment during the intensive phase, and on weekly supervised treatment during the continuation phase.

Practical Issues When Monitoring TB treatment:

- In pulmonary smear-positive cases, the conversion of sputum smears from smear-positive to smear-negative is the best early indicator that chemotherapy is taken regularly and effectively.
- After two months of chemotherapy more than 80% of NEW pulmonary smear-positive cases should have converted to smear-negative, and after three months this rate should increase to more than 90%.
- To determine the CURE RATE (also called success rate), add the number of new pulmonary smear-positive cases cured to the number of new smear-positive cases who completed then divide the resulting numbers by the total number of new pulmonary smear positive cases. Multiply the number by 100 to obtain the cure rate in percent.
- One of the main objectives of NTP is to cure more than 85% of new smear positive pulmonary TB cases put on treatment.

Treatment Outcome:

Table.2: TB Treatment Outcome

Cure	A patient who is smear-negative in the month of treatment and on at least one previous occasion
Treatment completed	A patient who has completed treatment but who does not meet the criteria to be classified as a cure or a failure
Treatment failure	A patient who remains or becomes again smear-positive at five months or later during treatment
Died	A patient who dies for any reason during the course of treatment
Default	A patient whose treatment was interrupted for two months or more
Transfer out	A patient who has been transferred to another reporting unit outside the Governorate and for whom the treatment outcome is not known.

- Also a patient who was initially smear-negative before starting treatment and became smear-positive after completing the initial phase of treatment.

Adverse Reactions And Their Management:

Table.3: TB Adverse Reactions and Their Management

Side Effect	Responsible Drug (s)	Management
1- Minor Side Effects - Anorexia, Nausea, Abdominal pain - Joint pains - Burning sensation in feet - Orange/red colour of urine	⇒ Rifampicin ⇒ Pyrazinamide ⇒ Isoniazid ⇒ Rifampicin	Always Continue Treatment! Take drugs at night Acetyl salicylic acid Pyridoxine 100mg daily Reassurance
2- Major Side Effects	⇒	Stop Responsible Drug!
- Itching of skin/ skin rash	⇒ Streptomycin	Stop streptomycin
- Hearing impairment or Deafness	⇒ Streptomycin	Replace Streptomycin with Ethambutol
- Dizziness (vertigo/ nystagmus)	⇒ Streptomycin	Replace Streptomycin with Ethambutol
- Jaundice	⇒ Most anti-TB drugs	Stop all drugs; urgent liver function tests and prothrombin time
- Vomiting and confusion (suspect acute liver failure)	⇒ Most anti-TB drugs	Stop all drugs; urgent liver function tests and prothrombin time
- Visual impairment	⇒ Ethambutol	Stop Ethambutol
Shock; purpura; acute renal failure	⇒ Rifampicin	Stop Rifampicin

Adherence To Treatment:

- At least two health workers from each PHC unit must be trained on how to implement DOTS. If possible, some volunteers (NGOs) should attend this training session.

Preventive Measures To Minimize Treatment Interruption

At the time of registration of a TB patient starting treatment, sufficient time should be set aside

Record the patient's address and other relevant addresses

Identify potential problems

Inform the patient about the duration of treatment need consult ahead of time in case of permanent or temporary change of address.

Corrective Measures to Minimize The Duration of Treatment Interruption:

Enquiries and find out the cause of the patient's absence. The patient should be contacted the next day after missing treatment during the initial phase and within a week during the continuation phase.

Recording

A) Tuberculosis Treatment Card (TB/01)

This card is kept at the chest facility where the patient is registered. It provides information about the patient, as well as on disease classification, sputum examination, default action and treatment outcome. The card also contains information on administration of drugs during the initial intensive phase supervised by the health worker and administration of drugs during continuation phase.

B) Tuberculosis Identity Card (TB/02)

This card has to be kept by the patient. It contains information on the patient; the disease classification; the date of start of treatment; and the treatment regimen. The card also shows the date of the next appointment.

C) Chest Clinic Tuberculosis Register (RB/03)

The Tuberculosis register is an essential tool for programme monitoring. The register is kept at the chest facility and contains information on all TB patients registered in that facility. The register consists of two pages: the first page contains all elements of identification of the patient, the diagnosis, and the treatment prescribed; the second page contains information concerning case management, evaluation of bacteriological examination, and the outcome of treatment. Most of the columns are self-explanatory.

D) Laboratory Register (TB/04)

This register is kept at laboratories of all chest facilities performing sputum smear examinations for AFB. For diagnostic purposes a total of three sputum specimen must be examined and recorded, and two for each follow-up of patients. All results of diagnostic examinations must be entered.

E) Request Form for Sputum Examination (TB/05)

It is important to indicate in this form whether the sputum is sent for diagnosis, for follow-up or

for a health certificate. In the former case a detailed address should be given for the patient, so that the patient can be traced in case he does not return to the health facility and the sputum is found to be smear-positive.

F) Tuberculosis Culture/Sensitivity Test Request Form (TB/06)

Request for culture/sensitivity test will be sent from the chest facility to the Central or Intermediate Laboratories (when designated) in case of failure to respond to short course chemotherapy, or before commencement of re-treatment regimens.

G) Tuberculosis Referral / Transfer Form (TB/07)

This form will be used when transferring patients from one chest facility to another. It will be filled in triplicate: the first copy will be given to the patient (to hand over at the next chest facility); the second is sent to the chest facility directly; and the third copy is kept for records. The receiving chest facility will fill the bottom half of the form and return it to the referring or transferring facility, as soon as the patient presents himself at the facility. The private practitioner who wants to refer his patient to the district chest facility can also use this form.

Reporting

A) Quarterly Report on Case Detection (TB/08)

This report contains information on new cases (pulmonary smear-positive, pulmonary smear-negative and extra-pulmonary cases) and smear-positive cases put on retreatment regimen (relapse, treatment after default and treatment failure). It also reports on the activities of the laboratory.

B) Quarterly Report on The Treatment Outcome (TB/09)

This report provides information about the treatment outcome of all smear-positive cases: new smear-positive cases: smear-positive relapses and other re-treatment cases that were registered in the chest facility 12 to 15 months earlier)

C) Quarterly Report on Sputum Conversion (TB/10)

This report shows the results of sputum smear examination after two and/or three months of treatment of sputum smear-positive patients registered 3-6 months earlier. This report provides

the chest facility staff, GCT and NTP management with an early indicator of the effectiveness of treatment.

Tuberculosis in Children

Factors determining the epidemiology of tuberculosis in children:

- Socio- economic factors:
- Crowded houses, poor ventilation, and malnutrition resulting from poverty and ignorance.
- The transmission of tuberculosis infection:
- The main source of infection is an adult with smear positive sputum.
- Consequences of developing active pulmonary tuberculosis:
- The younger the age the higher the mortality. Those who survived the primary infection either pulmonary or extra-pulmonary appeared less susceptible to the adult-type of pulmonary tuberculosis later on in their life

Clinical Findings:

Clinical findings are frequently non specific. The presence of phlyctenular conjunctivitis, erythema nodosum, lymphadenopathy or heptosplenomegaly must lead to consideration of possible Tuberculosis.

Investigations:

Tuberculin Test

It is one of the cornerstones of the diagnosis. In absence of BCG vaccination or after 3 years of vaccination, an induration of > 10mm is indicative of infection with *M. tuberculosis*. In a child, within the first 3 years of vaccination with BCG, an induration of > 15mm indicates infection with *M. tuberculosis*. A false negative tuberculin test may be seen in malnutrition, following whooping cough or childhood viral infections, during corticosteroid therapy, overwhelming bacterial infections including tuberculosis.

Chest Radiography:

- Ghon's focus (alveolar Consolidation)
- Mediastinal lymph glands enlargement
- Complications of either or both: Cavities, (Collapse) and Infiltration
- Miliary shadows

Sputum Examination:

Gastric aspirate of the early morning after 8-20 hours fasting or laryngeal swabs. Hypertonic saline induced sputum via nebulizer bronchial alveolar lavage.

Routine Blood Picture

Blood picture is of little diagnostic value. ESR is raised and mild anemia is accompanied by a degree of monocytosis.

Special Investigations (Refer)

Biopsy of accessible tissues; bronchoscopy bone marrow aspiration.

Score System

A score of 7 or more indicates a high likelihood of TB

Table.4: Score System for TB

Feature	0	1	2	3	4	Score
General						
Duration of illness	2 w <	2-4w		4 w >		
Weight for age	80% >	60-80%		60% <		
Family history	-VE	Reported		Proved +VE		
Tuberculin test				Positive		
Malnutrition				Not improving After 4 w		
Unexplained fever and night sweats			No response to non-specific treatment			
Local						
				Lymph nodes		
				Joint or bone swelling		
					Angle deformity of the spine	
Total score						

Treatment of Childhood Tuberculosis

2 HRZ/ 4HR. Streptomycin can replace Rifampicin or Pyrazinamide if any of them is contra-indicated. Streptomycin should be added in the following conditions:

- Severe forms of TB, e.g., TB meningitis, military TB
- Re-treatment cases (relapse case, Treatment failure cases and treatment after interruption)
- Immuno- suppressed patients.

Preventive Chemotherapy:

A6 month course of preventive treatment with

daily Isoniazid (5mg/kg) is effective. Close family contacts of smear-positive sources.

Target groups for preventive treatment

Infants of Mothers with PTB

A breast-feeding infant has a high risk of infection from a mother with PTB, and a high risk of developing TB. The infant should receive 6 months Isoniazid treatment, followed by BCG immunization. An alternative policy is to give 3 months Isoniazid, then perform a tuberculin skin test. If the skin test is negative, stop the Isoniazid and give BCG. If the skin test is positive, continue another 3 months Isoniazid, then stop Isoniazid and give BCG.

Children Under 5 Years of Age

It is important to screen child house-hold contacts of adults with sputum smear-positive PTB. Screening identifies those children less than 5 years of age without symptoms. Give these children 6 months Isoniazid preventive treatment. Children under 5 years of age with symptoms need investigation for TB. If investigations show TB, the child receives anti-TB treatment. If investigations do not show TB, the child should receive Isoniazid preventive treatment.

HIV- Infected Individuals

Controlled clinical studies have shown that Isoniazid preventive treatment reduces the risk of TB disease in HIV- positive individuals also infected with *M. tuberculosis*.

Preventive Measures for Tuberculosis

General Measures:

- Environmental sanitation
- Legislation (e.g., free contact examination)
- Health education.
- Good ventilation.
- Good nutrition.
- Pasteurization or sterilization of milk.

Specific Measures:

BCG Vaccination

Vaccinate all children at birth with BCG. To give protection against the serious forms of TB such as TB meningitis military TB which is commonest in the under 5 year's age group.

Maximum effect is in the first 3-5 years after vaccination.

The Prevention of Tuberculosis in Health Care Facilities:

Patient Education

Sputum Collection

Sputum collection always should be outside (open environment) and away from other people, not in small rooms such as toilets or other enclosed areas.

Outpatient Settings

Patient waiting areas should be open and well-ventilated. Patients who may have infectious TB should be triaged to separate clinics or waiting areas

Inpatient Management: Separation and Isolation Policies

Establish separate wards or rooms for confirmed infectious TB patients and the wards should be well-ventilated.

Reducing Exposure in the Laboratory

- Sputum collection should not take place in the laboratory area.
- A pass-through window should be used to deliver sputum samples.

Radiology

Radiology Departments Should Attempt to:

- Provide coughing patients with a surgical mask to wear; alternatively provide tissues or cloth.
- Provide expedited priority service to potentially infectious TB patients to minimize the length of time spent in the department.
- Use the room with the best ventilation for taking images of potentially infectious TB patients.

Sputum Induction and Cough-inducing Procedures

Cough-inducing procedures (e.g., sputum induction or bronchoscopy) should be done only when absolutely necessary on patients who may have TB. Likewise, bronchoscopy should be used as a last resort after other less risky diagnostic measures have been taken.

Practical Approach to Lung Health (PAL)

Up to one third of patients over the age of five years attending FHU seek health care for respiratory symptoms. Ideally, TB cases should be detected among patients with respiratory symptoms within FHU.

Treatment of Helminthes

2

Treatment of Helminthes

Helminths

Nematodes:

Entrobilus
Ascaris
Strongyloids
Ancylostoma
Trichuris trichura

Trematodes (Flukes):

Schistosomiasis
Fasciola

Cestodes (Tape Worms):

Tenia saginata
Tenia solium
Hymenolopis nana
Echinococcus (Hydatid)

Protozoa

- 1- Blood and tissue: Malaria
- 2- GIT:
 - a) Amoebae
 - b) Giardia

1- Nematodes

	Ascaris	Ancylostoma	Entrobilus	Trichuris	Strongyloids
Mebendazole 500mg (ANTIVER) Single dose	++	++	++	+	+

Mebendazole: 100mg/tablet, twice daily for 3 days or 100mg/ml

adult and pediatric dosing is 100 milligrams (mg) orally as a single dose; for whipworms, roundworms, pinworms, and hookworms, the dose is 100mg orally twice daily for 3 days.

Clinical Applications:

Mebendazole is an effective anthelmintic and has been used successfully in the treatment of pinworms, whipworms, hookworms, and roundworms.

Clinical Applications:

Mebendazole is an effective anthelmintic and has been used successfully in the treatment of pinworms, whipworms, hookworms, and roundworms.

2- Trematode

- Schistosomiasis (Bilharziasis)
- Fasciola

Both Praziquantel (tab. 40mg/kg), single dose.

Praziquantel: 600mg/ tablet, 60mg /ml

The dose of Praziquantel for Schistosoma haematobium or mansoni, 40mg/kg/day orally divided in 2 doses for 1 day is given; 75mg/kg/day for 1 day is used for liver flukes (Clonorchis sinensis/Opisthorchis viverrini).

3-Cestodes

T.Saginata: Praziquantel 10mg/kg, single dose

T.Solium: Praziquantel 50mg/kg/d in divided three doses for 10 days

Hydatid: Refer.

H.nana: praziquantel 25mg/kg if heavy repeat after 7 days

Children: praziquantel 10-20mg/kg

Protozoa

Blood & tissue:

Malaria treatment:

P.Vivex, ovale, malaria & CQ sensitive P. flaciparum:

Chloroquine 600mg

Then 300mg after 6 hours

Then 300mg after 24 hours

Then 300mg after 24 hours

Chloroquine tab 250 & 200mg- syrup 80mg/ml

Prophylaxis:

- No CQ resistance: Chloroquine 300mg weekly
- CQ resistance: Mefloquine 250mg weekly

Mefloquine

Acute Disease

- Initial dose, 5 tablets (1250mg) given as a single oral dose.

Prophylaxis - Usual dose, 250mg per week prior to departure, during period in endemic area and 4 weeks after return

or

Doxycycline 100mg daily

Chloroquine tab 250&200mg - syrup 80mg/ml

GIT Protozoa:

- **Amoeba:** Metronidazole 750 tds for 10 days
- **Giardiasis:** Metronidazole 2 gm as single dose Metronidazole 250mg/ tab &125mg/5ml

Urinary Tract Infections (UTI)

3

Urinary Tract Infections (UTI)

UTI is one of the most common conditions seen in general medical practices.

Risk Factors

- Diabetes Mellitus
- Pregnancy
- Menopause
- Urinary stasis
- Genitourinary malformation
- Stones
- Genitourinary instrumentation
- Catheterization
- Sexual intercourse
- Delayed micturition
- Dehydration

Treatment

- Encourage fluid intake
- Antibiotics e.g. Trimethotrim, Ciprofloxacin

Investigation

- Urine analysis (midstream urine)
- Culture & sensitivity of urine (send urine sample before giving antibiotics)
- Consider further investigation if:
 - o Recurrent urinary tract infection
 - o Suspect pyelonephritis
 - o Unclear diagnosis
 - o Unusual organism

Ask For:

1. Urea & creatinine in blood
2. PCR (if man >40)
3. Plain X-ray & US & IVP

Refer

Refer to the Specialist:

- If any abnormalities are detected
- Or persistent symptoms in spite of therapy

Prescribing in Renal Patients

Roles of the kidney in dealing with drugs

1. Drug elimination (clearance).
2. Proximal tubular secretion of drugs.
3. Activation of drugs (vit.D, Insulin).
4. Inactivation of drugs (Imipinem).
5. Secretion of hormones (Erythropoietin).
6. Target for hormonal action (PTH, Calcitonin, ADH, Aldosterone).
7. Autacoid (Local Hormone) production (PGs, Renin, Endothelins).

Drug Clearance By The Kidney

It is Controlled by the following factors:

A- Renal Blood Flow & Glomerular Filtration.

- It is increased by:
Vasodilators, Digoxin, Other inotropics, Methyl xanthines.
- It is decreased by:
Vasoconstrictors, ACEI, AR blockers, Beta-blockers, Verapamil & other negative inotropics.

B- Changes of PH of The Filtrate:

- Acidic drugs (e.g., Salicylates, Barbiturates, Sulphonamides, etc..) are better eliminated renally in alkaline urine.
- Meanwhile, basic drugs (Atropine, Amphetamine, Ephedrine, etc..) are better eliminated in acidic urine.

N.B.

- **Urine is rendered Acidic by:**
Ascorbic acid, Nalidixic acid, Ammonium chloride, methenamine.
- **Alkalinization is produced by:**
Sodium bicarbonate, Lactate, Citrate, etc..

C- Physico- Chemical Properties of Drugs

(Polarity, Size of the molecules, lipid solubility, etc...)

It follows the same principles mentioned in the chapter dealing with drug absorption.

D- Drug Secretion by Tubules:

Proximal Tubular Secretion of Drugs

- Tubular secretion of drugs or body excreta like Uric acid occurs in the proximal convoluted tubules (S1 & S2).

- Examples of drugs eliminated by this route include:

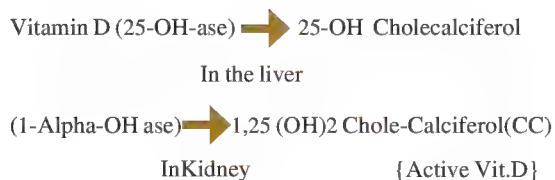
Acidic Agents (Anions):

Penicillins, Cephalosporins, Methotrexate
Thiazides, Loop Diuretics, Salicylates,
Indomethacin, Acetazolamides.

Basic Agents (Cations):

- Quinine, Quinidine, Atropine, Morphine, Pethidine, Adrenaline
- TMP, Quat. Ammon. Comp. Amiloride, Triametrine, Histamine.
- Some drugs inhibit this tubular secretion of others, leading to elevation of plasma level of the latter; e.g.:
 - a. Probenicid inhibits tubular secretion (T.S.) of penicillins, cephalosporins, chloramphenicol, leading to rise of their plasma level (Useful drug/drug interaction).
 - b. Probenicid inhibits T.S. of thiazide and loop diuretics, and thus inhibit their diuretic effect, as they must act from the luminal side of the tubules.
 - c. Quinidine inhibits T.S. of digitalis, leading to rise of digitalis plasma level and may contribute to toxicity.
 - d. Chlorpropamide inhibit T.S. of dicoumarol and warfarin which may lead to bleeding tendency unless the dose is adjusted.

Activation of Drugs in the Kidney



Thus in CRF, use one alpha preparation, Not vitamin D, due to deficiency of one alpha hydroxylase enzyme in cases of CRF.

Inactivation & biotransformation of drugs in the kidney

- Imipinem (Beta lactam Antibiotic) is inactivated by Renal Dihydro-peptidase (DHP).
- Cilastatin inhibits DHP, and protects imipinem. Thus the combination Imipinem/Cilastatin (Tienam) is used as an effective stable Beta lactam in bacterial infections.
- Small MW proteins and Polypeptides, e.g., Insulin, PTH, Calcitonin etc are partially cleared by the kidney. Thus their clearance is reduced in CRF & their T_{1/2} prolonged. So Diabetic Needs for insulin is Reduced as their Renal Function Declines.
- Oxidation of Salicylates, acetaminophen in renal tissues shares for pathogenesis of renal toxicity of these drugs.

Endocrine function of the Kidney

Secretion of Erythropoietin (EPO), to stimulate Bone Marrow for RBCs production. Thus in CRF, anemia is a sign, treated by EPO, which is mandatory in these cases.

Target for Hormonal actions

1-PTH (Parathormone hormone):

- Stimulates reabsorption of Calcium from distal CT.
- Inhibits Phosphate reabsorption from all segments of the nephron.
- Stimulates 1-Alpha-OH ase in the kidney.

2-Calcitonin:

- Inhibits reabsorption of Calcium and phosphate from all segments of the nephron.

3-ADH:

- Increasing permeability to water in Distal & Collecting Tubules.
- Used in Treatment of Diabetes Insipidus (Pit. type).
- Overproduction of ADH (syndrome of inappropriate ADH production "SIADH") hyponatremia, volume expansion, natruresis.
- It is due to many causes of which DRUGS; e.g., Desmopressin, Oxytocin, Vincristine, Chlorpropamide, Nicotine, Chlorophosphamide, Morphine, Amitriptyline, SSRI.

- This condition is treated by Lithium or Demeclocycline Plus acute correction of Hyponatremia with this formula:

4-Aldosterone:

- Which control Sodium, Potassium exchange in Distal CT.
- Aldosterone Antagonists are used as Potassium Sparing Diuretics, especially in cases of Hyperaldosteronism (CHF, Liver Cirrhosis, Nephrotic Syndrome, etc.), and in combination with other hypokalemic diuretics.

Renal Autacoids

1-Prostaglandins:

PGE_2 (Medullary), PGI_2 (Cortical), $F_2\alpha$, D_2 , TXA_2 .

They have the following Functions:

1. It counterbalances the Renin Angiotensin System (RAS) in control of hypertension (HTN).
2. It controls RBF & GFR & CCM (Counter Current Multiplier) system.

Note

- NSAIDs (as cyclooxygenase blockers) block synthesis of PG synthesis leading to decreased RBF & GFR. -Hyperkalemia-TINs (Toxicity).
- COX-II in the kidney has constitutive functions, Thus even selective COX-II inhibitors (Celecoxib, Rofecoxib, Nemisulide, Meloxicam, Valdecoxib, Etc...) Have the same effects like other NSAIDs.

3. Diuretic action of Loop Diuretics is mediated partly by renal PGs. Thus: NSAIDs (Selective and Non-selective COX-II inhibitors) antagonize the diuretic effect of Loop diuretics.

2-RENIN:

- Secreted by JGA (Juxtaglomerular Apparatus), for control of glomerulotubular functions.
- Its secretion is controlled by B-receptors, Renal electrolytes, blood volume and HCT

(heamatocrite) value.

Angiotensinogen

(RENIN)

Release of Hypoten. PGs

Angiotensin-I

Bradykinin Inactive

(Angiotensin Converting Enzyme "ACE")

Angiotensin-II

Ang.III.

- Direct Vasoconstriction.
- Stimulation of B-receptors.
- Release of Catecholamines from their stores.
- Release of Aldosterone.
- Release of ADH.
- Growth factor of Cardiac MFs & Vascular SMFs.
- Feedback inhibition of release of RENIN

Note

Effect of ACEI & Arblockers is hazardous in Volume depleted rather than normal persons.

3-Endothelins:

(ET_1 , ET_2 , ET_3), acting on $ET_{A\&B}$ "receptors".

- They influence epithelial cell proliferation & Solute transport (ET_B), induce VC ($ET_{A\&B}$)
- Their level increases in acute & Chron. R.D.
- Their antagonists are in early Clinical trials.

Changes in the Pharmacokinetics & pharmacodynamics of drugs in cases of impaired renal function

Absorption:

- May be impaired due to nausea, vomiting of uremia.
- Some unabsorbable drugs are absorbed e.g., Aminoglycosides, Aluminium preparations (Antacids or as phosphate binders).

Volume of Distribution:

May be increased or decreased, thus changing the total dose required ($Serum\ conc. \times V_d$).

Protein Binding:

Some patients are Hypoproteinemic (e.g., Nephrotic syndrome), thus increasing free drug

level, and needing dose adjustment especially of highly protein bound drugs.

Note

Excess H^+ in such cases of CRF occupy the receptor sites for acidic drugs e.g. Sulpha, Penicillins, Salicylates. Thus increasing the free fraction of these drugs.

Metabolism & Biotransformation:

Reduced for drugs like Vit. D and Polypeptides (Insulin).

End Organ Sensitivity:

May be changed, e.g. Thiazides have little diuretic effect in severe RF, and they are contraindicated in these cases, as they reduce renal blood flow.

Renal Clearance of drugs:

It is reduced due to accumulation of drugs or their metabolites.

Remember

Uremia may be precipitated by drugs increasing protein catabolism e.g., Corticosteroids and tetracyclines (except doxycycline).

Do Not Forget

Points to keep in mind when prescribing a drug for a renal patient

- Is treatment by the drug mandatory?
- Can the drug reach its site of action in suitable concentration? (Nitrofurantoin is not suitable in CRF)
- Is drug kinetics altered in CRF?
- Will the drug or its metabolite accumulate in CRF?
- Is the drug Nephrotoxic?
- Will the drug worsen the uremic state? (e.g., Tetracycline)
- Is the drug Sodium or Potassium salt?
- Adjust the dose guided by creatinine level or CL_{Cr}.
- The dose should be titrated by Clinical effects.
- Early detection of Toxicity & Drug Monitoring.

Remarks

- Renal impairment, according to CrCl, is divided into:
 - o Mild (20-50 ml/min.)
 - o Moderate (10-20 ml/min.)
 - o Severe if less than 10 ml/min.
- ACEI: Use with caution in renal impairment. Avoid if CrCl is less than 30 ml/min.
- Allopurinol toxicity and rash is seen with moderate impairment, if severe, don't exceed 100 mg/day.
- With severe impairment, Aluminium absorption and accumulation is increased. Its absorption is increased by Citrates present in effervescent forms.
- Max. dose of Benzyl Pen. with renal impairment is 6 g/day, Neurotoxicity and convulsions are expected.
- Beta Blockers in Renal impairment: Use Small doses of Atenolol, Nadolol, Sotalol, Pindolol. Reduce Acebutolol dose. With severe impairment, they reduce RBF leading to more deterioration of the case.
- Erythromycin max. dose in severe renal impairment is 1.5 g/day, Ototoxicity is expected.
- Higher doses of Frusemide and Bumetanide are needed with moderate renal impairment.
- Deafness may follow rapid IV Lasix.

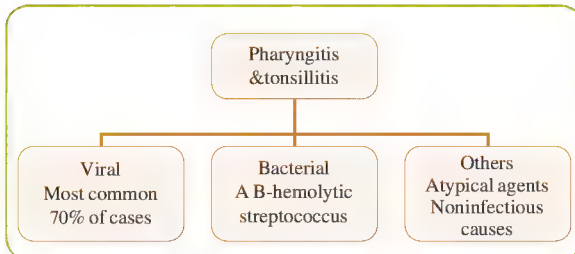
Management of Respiratory Tract Diseases & ENT

4

Management of Respiratory Tract Diseases & ENT

Sore Throat (Pharyngitis & Tonsillitis)

It's a common condition occurs, more in children & young adults.



Clinically viral & bacterial infections are indistinguishable.

Investigation:

- Throat swabs cannot distinguish Commensal Organisms from Clinical Infection, are expensive & do not give instant results so rarely used.
- Rapid antigen tests give immediate results but have low sensitivity (60%)

Management:

- For viral pharyngitis, treatment is symptomatic, analgesia & antipyretics, increase fluid intake & gargle with oral antiseptic or salt water.
- For possible streptococcal throat begin antibiotics, aiming at preventing complications such as rheumatic fever & Glomerulonephritis.

Treatment of Choice:

- Penicillin oral or Intramuscular:
 - Penicillin V 500mg 3/day or 4/day for 10 days
 - Benzathine penicillin 1.2 million units IM (Do sensitivity test for penicillin)
(Be familiar with symptoms, signs & treatment of anaphylaxis & observe patient for 30 minutes after injection)
 - Erythromycin can be used if patient is allergic to penicillin (250mg / 6 hr for 10 days)

Note

If rash appeared when using Amoxicillin consider the case as glandular fever (Infectious mononucleosis) and refer to specialist.

- If history of rheumatic fever look at "Rheumatic fever" chapter & IMCI.

Do Not Forget

Indication for referral for tonsillectomy

- Recurrent acute tonsillitis more than 5 attacks causing school absence in a year.
- Airway obstruction caused by very large tonsils causing sleep apnea.
- Chronic tonsillitis is staying more than 3 months causing halitosis.
- Recurrent quinsy (Peritonsillar Abscess)
- If there is unilateral Tonsillar enlargement to exclude malignancy.

Health Education:

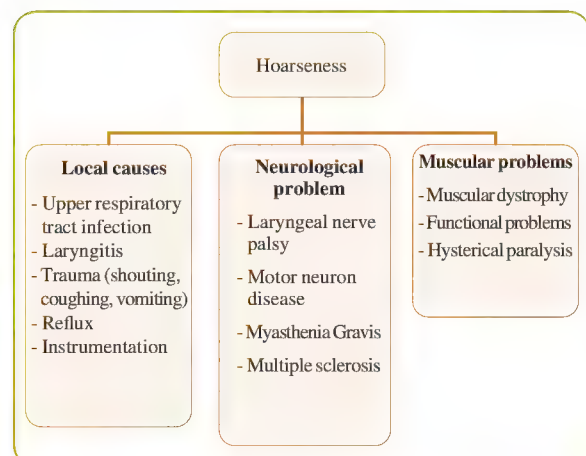
- Teach parents & patients to go to hospital immediately if the pain becomes severe or if dyspnea, difficulty in swallowing, excessive salivation & inability to fully open the mouth.
- Patients with streptococcal pharyngitis should not return to school or work until they have stopped antibiotic therapy for a full 24 hours.

Hoarseness

Definition:

Change in quality of the voice affecting pitch, volume or resonance.

Occur when vocal cord function is affected by change in the cords, neurological or muscular problem.



Management:

- Refer all cases with hoarseness lasting more than 3 weeks for ENT assessment to exclude carcinoma.
- Refer cases to specialist according to history & physical examination.
- Treat cases of upper respiratory tract infection & laryngitis. Rest voice, analgesia & steam inhalations. Consider antibiotics if bacterial infection suspected.

Stridor

Noise created on inspiration due to narrowing of the larynx or trachea. Children are more affected than adults.

Causes of Stridor

- Congenital abnormalities of the larynx
- Epiglottitis
- Croup (Laryngotracheobronchitis)
- Inhaled foreign body
- Trauma
- Laryngeal paralysis

Treatment:

- I.V cortisone
- Refer to ENT specialist.
- Look at more details in Emergency Chapter.

Nasal Problems

Foreign Bodies in The Nose

Foreign bodies in the nose are common in young children.

Refer all children with unilateral offensive discharge to ENT specialist, for exploration under general anesthesia.

Do not try to remove yourself unless the object is very superficial & the child is co-operative. You might push object further in causing trauma.

Injury to The Nose

- Injury can be to the nasal skin (laceration), bone (fracture) or cartilage (septal hematoma & deviation).
- Refer to ENT specialist.
- Isolated skin laceration can be sutured. Do not use local anesthetic containing adrenaline for the nose.

Nasal Allergy:

- Very common disease (20% of population)

Clinical picture:

recurrent attacks of sneezing, nasal itching, watery nasal discharge.

Treatment:

- Oral antihistamines
- Nasal steroid therapy

Epistaxis:

First aid treatment is a piece of cotton soaked with epinephrine is inserted in the nose.

Snoring:

Abnormal sound during sleep.

Sleep Apnea:

Definition: temporary cessation of breathing during sleep it may occur in snoring patients. It may lead to severe medical problems

Painful & Discharging Ears

Definition:

Earache is a common presenting symptom in general practice. It is often a sign of ear infection but if the ears are normal on examination you should look for a cause of referred pain, i.e. from the throat, teeth, sinuses, facial nerve, lymph nodes, or wounds in the neck.

Causes:

- Otitis media & perforated drum
- Herpes zoster oticus
- Furunculosis
- Otitis externa
- Cholesteatoma

Management:

1. In Otitis media, start antibiotics to avoid complications. Give paracetamol or NSAIDs for analgesia. Refer to ENT specialist, if recurrent attacks or if acute perforation does not heal in 1 month.
2. Herpes zoster if detected just after the rash appearance, give antiviral drug as acyclovir.
3. In Furunculosis start topical antibiotics, analgesics. It is important to exclude diabetes.
4. Otitis externa, treat mild cases with removal of the infected material by gentle syringing & give topical antibiotic ear drops e.g. gentamycin 0.3%, steroid ear drops e.g. gentisone HC. Analgesics are needed. Refer cases that need aural toilet to ENT specialist.

Foreign Bodies in The Ear

- Common in children.
- Remove under vision with forceps, if the

child is cooperative. Be careful not to push the object deeper to avoid injury of the canal.

- Insects can be drowned in oil & syringed out.
- Refer to ENT when extraction under general anesthesia is considered.

Deafness

Temporary or permanent

Childhood deafness

- Temporary is common
- Noticed by parents or teachers
- Makes problems in speech & behaviors
- Refer to ENT

Adult deafness

- Common
- 2 types:
 - o Conductive & Sensorineural deafness
 - o Refer to ENT

Tinnitus

- Ringing or buzzing heard in the ears or head.
- Occasional tinnitus is common 15% but 2% are severely affected to extent that interferes with daily life & sleep, could lead to depression.

Causes:

- Often unknown

May accompany:

- Hear loss
- Noise exposure
- Head injury
- Menieres disease
- Anemia
- Hypertension
- Drugs: (Loop diuretics, amino glycosides, aspirin, NSAIDs)

Management:

- Reassurance
- Refer to audiologist for hearing aid if there is deafness.
- Refer to psychologist to treat associated depression.
- Refer to ENT to exclude serious causes.

Vertigo:

Definition: An illusion that the surroundings are spinning.

Causes:

- Episodic (seconds or minutes); positional
- Episodic (minutes to hours); Menieres
- Prolonged (more than 24 hours)
 - o Peripheral lesion e.g. viral labyrinthitis or trauma
 - o Central lesion e.g. multiple sclerosis, tumors, stroke.

Management:

- Symptomatic treatment
- Give Cinnarizine
- Refer to ENT specialist.

Respiratory Tract Infection

Common Cold

Inflammation of all or part of the mucosal membranes from the nasal mucosa to the bronchi

Clinical Presentation

Multiple cases occur in family, work and school settings.

Characterized by one or more of the following symptoms:

1. General malaise with low grade or no fever.
2. Nasal discharge, obstruction or congestion.
3. Sneezing/coughing, sore throat and hoarseness
4. Conjunctivae may be watery and inflamed.

Usually self-limited; lasting approximately 5-7 days,

Treatment

1. Oral decongestants;
2. For fever orally suggest acetaminophen, ibuprofen, adults can use aspirin as well.
3. Warm saline gargle
4. Cough suppressants
5. Antibiotics: only if secondary bacterial infection occurs.

B. Patient Education

Advise rest and increased oral fluid intake.

Influenza

Acute viral disease of the respiratory tract

Clinical Presentation

- Influenza can occur in epidemics which last approximately 5-6 weeks.
- Characterized by abrupt onset of fever, malaise, myalgia, headache, clear nasal discharge, sore throat, and non-productive cough.
- Cough is usually the most frequent and troublesome symptom and may be associated with substernal discomfort
- In individuals is history of contact to birds or poultry, R/O Avian Flu

Treatment

Symptomatic treatment is needed

Patient Education

- Recommend rest and increased fluids
- Encourage cessation of smoking in household
- Teach patient to return to clinic if chest pain, dyspnea, hemoptysis, wheezing, increased temperature, confusion or other central nervous system problems occur

Acute Bronchitis

Acute bronchitis involves inflammation of the bronchi that causes acute onset of cough and sputum production.

Treatment is symptomatic and directed most often at controlling cough:

- Antitussives
- Antibiotics
- Corticosteroids (may be used)

Pneumonia

Acute inflammation in the lung alveoli usually secondary to infection

Signs and Symptoms

- Often presents with abrupt onset of high fever, shaking chills, productive cough of purulent or rusty sputum, headache, prostration, and pleuritic chest pain

Physical Examination

- Assess vital signs
- Observe for respiratory disease such as cyanosis, tachypnea, intercostal retractions, accessory muscle use, nasal flaring, and grunting
- Auscultate lungs; typical findings are the following:
 - a. Localised diminished breath sounds
 - b. Rales and tubular breath sounds
 - c. Egophony (changes Patient's "oe" to what sounds like "ay")
 - d. Bronchophony (voice sounds are louder and clearer than usual)
 - e. Whispered pectoriloquy (whispered sounds are louder and clearer than normal)
- Palpate chest for tactile fremitus (palpate for increased areas of vibration as patient says "ninety-nine" or four-four in Arabic)
- Percuss chest for dullness which is typical over consolidated lung tissue
- Diagnostic Tests
Plain Chest x-ray: P-A and Lateral views

- Gram stain and culture of expectorated sputum (both tests lack sensitivity and specificity but are helpful in diagnosing infections caused by Mycobacterium species, endemic fungi, and Legionella species)

Do Not Forget

Treatment

- A. Refer patient who appears toxic, has haemoptysis, severe dyspnoea, a history of a serious, chronic disease
- B. Hospitalisation should be strongly considered for patients with the following risk factors, especially if there are multiple risk factors present. (See chart that follows.)

Outpatient Treatment Guidelines for Pneumonia

Outpatient Pneumonia Without Co-morbidity and <60 Years

Erythromycin 250-500mg tid or qid for 7-14 days

- If patient is intolerant of erythromycin or is a smoker (to treat H. influenzae, prescribe one of the following:
 - o Roxithromycin: 150-300mg every 12 hours for 7-14 days.
 - o Azithromycin: 500mg day 1, then 250mg daily for 4 days (take 1 Hour before meals or 2 hours after meals). In Egypt, azithromycin is given in a dose of 500mg before breakfast for three days.
 - o Doxycycline: 100mg bid x 7-14 days should be used only if patient is allergic or intolerant of macrolides.

Prescribe one of following:

- ## Asthma in Adults:

Asthma is a syndrome of reversible airway obstruction, allergic inflammation, and airway Hyperresponsiveness.

Table.5: Stepwise Approach for Managing Asthma In Adults and Children Older than 5 Years of Age

Assessment	Classification	Treatment
<p>LOOK:</p> <ul style="list-style-type: none"> ▪ Episodic shortness of breath ▪ Wheezing ▪ Chest tightness ▪ Intercostal retractions ▪ Tachypnea with prolonged expiratory phase ▪ Cyanosis ▪ Diaphoresis ▪ Nasal flaring <p>ASK:</p> <ul style="list-style-type: none"> ▪ Symptoms have seasonal, continuous, episodic, or circadian (i.e., nocturnal symptoms) pattern? ▪ Conditions known to be related to asthma: dyspnoea, dry cough, wheezy chest, rhinitis, sinusitis, nasal polyposis, atopic dermatitis, allergies to foods and drugs, documented pneumonia, viral bronchitis, and gastroesophageal reflux. ▪ Family history of allergies and asthma. ▪ Aggravating factors such as environmental exposure (allergens, household pets, mold, pollen, chemicals, air pollutants, tobacco smoke) 	<p>Step 1: Mild Intermittent</p> <ul style="list-style-type: none"> • Symptoms < 2 times a week • Asymptomatic and normal PEF between exacerbations • Exacerbations brief (from a few hours to a few days); intensity may vary. • Night symptoms < 2 times a month • FEV1 or PEF > 80% predicted and PEF variability < 20% <p>Step 2 Mild Persistent</p> <ul style="list-style-type: none"> • Symptoms > 2 times a week but < 1 time a day • Exacerbations may affect activity • Night-time symptoms > 2 times a month <p>FEV₁, or PEF > 80% predicted and PEF variability 20-30%</p>	<p>S E E</p> <p>T R E A T M E N T</p>

<p>Listen:</p> <ul style="list-style-type: none"> ■ Cough (often occurs at night or during exercise) ■ Adventitious sounds ■ Prolonged expiratory phase of respiration <p>DIFFERENTIAL DIAGNOSIS</p> <ol style="list-style-type: none"> 1. Tumours: benign or malignant 2. Chronic bronchitis 3. Pneumonia 4. Pulmonary embolism. 5. Congestive heart failure 6. Foreign body inhalation. 7. Allergic reactions presenting by bronchospasm. 8. Laryngeal dysfunction 9. Cough secondary to drugs such as beta blockers and/or angiotensin-converting enzyme inhibitors 	<p>Step 3:</p> <p>Moderate Persistent</p> <ul style="list-style-type: none"> • Daily symptom • Daily use of inhaled short-acting Beta₂-agonist • Exacerbations affect activity • Exacerbations > 2 times a week; may last for days • Night-time symptoms > 1 time a week • FEV₁, or PEF > 60% but < 80% predicted and PEF variability > 30% 	<p>T A B E L S</p>
<p>DIAGNOSTIC TESTS</p> <ol style="list-style-type: none"> 1. Spirometry or peak expiratory flow rate (PEFR) if available, measured by peak flow meter: <ul style="list-style-type: none"> ■ Increase of 15% in forced expiratory volume in 1st second or 20% in forced expiratory flow after bronchodilator treatment = ASTHMA 2. Chest x-ray P-A view or miniature mass radiography (MMR) <ul style="list-style-type: none"> ■ To exclude other causes of wheezy chest, and CBC if infection is suspected. 3. Allergy testing as Bronchial Challenge (in specialized centers). 	<p>Step 4:</p> <p>Severe Persistent</p> <ul style="list-style-type: none"> • Continual symptoms • Limited physical activity • Frequent exacerbations • Frequent night-time symptoms • FEV₁, or PEF < 60% predicted and PEF variability > 30% 	<p>B E L O W</p>
<ul style="list-style-type: none"> ■ Any attack not responding to ordinary bronchodilator therapy (inhalers) is considered acute severe asthma 	<p>Acute Severe Asthma</p> <p>REFERRAL of patient to a specialist is indicated in the following circumstances:</p> <ol style="list-style-type: none"> 1. Patient has had a life-threatening acute asthma exacerbation 2. Signs and symptoms are atypical or uncertainty exists concerning the diagnosis 3. Clinical problems such as nasal polyps or severe rhinitis complicate the airway disease. 4. Additional diagnostic testing such as bronchoscopy, provocative challenge are needed 5. Patient is not responding to the therapy 	<p>General:</p> <ul style="list-style-type: none"> . Oxygen . I.V. Line . Assurance of patients . B2 Agonist by inhalation <p>REFER TO HOSPITAL IMMEDIATELY</p>

Managing Asthma Long-Term

Table.6: Continued: Stepwise Approach for Managing Asthma In Adults and Children Older than 5 Years of Age

Stepwise Approach For Managing Asthma In Adults And Children Older Than 5 Years Of Age			
Goals of Asthma Treatment:			
<ul style="list-style-type: none">• Prevent chronic and troublesome symptoms (e.g. coughing or breathlessness in the night, in the early morning, or after exertion)• Maintain "near normal " pulmonary functions.• Maintain normal activity levels (including exercise and other physical activity)• Prevent recurrent exacerbations of asthma and minimize the need for emergency department visits or Hospitalizations.• Provide optimal pharmacotherapy with minimal or no adverse effects• Meet patients' and families' expectations of and satisfaction with asthma care			
Classify severity of Asthma			
Clinical features before Treatment			
Step 4 Severe Persistent	Symptoms: <ul style="list-style-type: none">• Continual symptoms• Limited physical activity Frequent exacerbation	Night-time Symptoms: Frequent	
Step 3 Moderate Persistent	<ul style="list-style-type: none">• Daily symptoms• Daily use of inhaled short-acting beta-agonist• Exacerbations affect activity• Exacerbations ≥ 2 times a week may last days	>1 time a week	
Step 2 Mild Persistent	<ul style="list-style-type: none">• Symptoms > 2 times a week but < 1 time a day• Exacerbations may affect activity	>2 times a month	
Step 1 Mild Intermittent	<ul style="list-style-type: none">• Symptoms < 2 times a week• A symptomatic and normal PEF between exacerbations• Exacerbations brief (from a few hours to a few days) intensity may vary	≤ 2 times a month	
<ul style="list-style-type: none">• The presence of one of the features of severity is sufficient to place a patient in that category. An individual should be assigned to the most severe grade in which any feature occurs. The characteristics noted in this figure are general and may overlap because asthma is highly variable. Furthermore, an individual's classification may change over time.• Patients at any level of severity can have mild, moderate or severe exacerbations Some patients with intermittent asthma experience severe and life-threatening exacerbations separated by long periods of normal lung function and no symptoms.			

Managing Asthma Long Term

Table.7: Usual Dosage for Long – Term Control medications in “Asthma”

Stepwise Approach For Managing Asthma In Adults And Children Older Than 5 Years Of Age:			
TREATMENT			
STEP 4: Severe Persistent	Long-term control Refer then follow up for Daily medications:	Quick Relief: • Short-acting bronchodilator: • Inhaled beta ₂ -agonists as needed for symptoms.	Education: • Refer to group education if available
STEP 3 Moderate persistent	Refer then follow up for Daily medications	• Short-acting bronchodilator inhaled beta ₂ -agonists as needed for symptoms.	
STEP2 Mild Persistent	One daily medication • Anti-inflammatory: either inhaled corticosteroid (low-dose) or cromolyn or nedocromil (children usually begin with a trial of cromolyn or nedocromil). • Sustained-release theophylline to serum concentration of 5-15mcg/ml is an alternative, but not preferred, therapy.	• Short- acting bronchodilator: inhaled beta ₂ -agonists as needed for symptoms. • Intensity of treatment will depend on severity of exacerbation. • Use of short-acting inhaled beta ₂ -agonists on a daily basis, or increasing use, indicates the need for additional long-term control therapy.	• Refer to group education if available
Step1 Mild Intermittent	• No daily medication needed	Short-acting bronchodilator: • Inhaled beta ₂ -Agonists as needed for symptoms. • Intensity of treatment will depend on severity of exacerbation. • Use of short-acting inhaled beta ₂ agonists more than 2 times a week may indicate the need to initiate long-term control therapy	• Teach basic facts about asthma • Teach inhaler/ spacer holding chamber technique • Discuss roles of medications • Develop self-management plan • Develop action plan for when and how to take rescue actions, especially for patients with a history of severe exacerbations • Discuss appropriate environmental control measures to avoid exposure to known allergens and instants.
Step down ↓ Review treatment every 1 to 6 months. Gradual stepwise reduction in treatment may be possible.		Step up ↑ If control is not maintained consider step up. First, review patient medication technique, adherence, and environmental control of (e.g. Avoidance allergens)	

Stepwise Approach For Managing Asthma In Adults And Children Older Than 5 Years Of Age:

NOTE:

- The stepwise approach presents general guidelines to assist clinical decision-making, it is not intended to be a specific prescription, Asthma is highly variable, clinicians should tailor specific medication plans to the needs and circumstances of individual patients.
- Gain control as quickly as possible, then decrease treatment to the least medication necessary to maintain control, Gaining control may be accomplished by either starting treatment at the step most appropriate to the initial severity of the condition or starting at a higher level of therapy (e.g. a course of systemic corticosteroids, higher dose of inhaled corticosteroids)
- A rescue course of systemic corticosteroids may be needed at any time and at any step.
- Some patients with intermittent asthma experience severe and life-threatening exacerbations separated by long periods of normal lung function and no symptoms. This may be especially common with exacerbations provoked by respiratory infections, a short course of systemic corticosteroids is recommended
- At each step, patients should control their environment to solve or control factors that make their asthma worse (e.g. allergens, irritants).
- Referral to an asthma specialist for consultation or co management is recommended if there are difficulties achieving or maintaining control of asthma.

Table. 8: Continued:Usual Dosage for Long-Term-Control medications in "Asthma"

Usual Dosages For Long-Term-control Medications				
Medication:	Dosage Form	Adult Dose	Child Dose	
Inhaled corticosteroids:				
• Beclomethasone dipropionate	50 mcg/puff	low dose: 200-400 mcg medium: 400-800 mcg high: 800-1600 mcg	low: 84-336 mcg medium: 336-672 high: >672	
• Budesonide.	200 mcg	low: 200-400 mcg medium:400-600 mcg high:>600 mcg	low: 100-200 mcg medium:200-400 mcg high: >400 mcg	
• Fluticasone	50 mcg,125 mcg	low: 500 mcg medium:500-1000mcg high: >1000mcg	low: 200mcg medium: 400mcg high: >400mcg	
• Triamcinolone Acetonide	100 mcg/puff	low: 400-1000 medium:1000-2000mcg high:>2000mcg	low:400-800mcg medium:800-1200mcg high: >1200mcg	
Systemic Corticosteroids (Applies To All Three Systemic Corticosteroids)				
Methylprednisolone	2, 4, 8, 16, 32mg tablets	• 7.5-60mg daily in a single dose or qod as needed for control • Short-course "burst" 40-60mg per day as single or 2 divided doses for 3-10 days	• 025-2mg/kg daily in single dose or qod as needed for control • Short course "burst": 1-2mg/kg/day, Maximum 60mg/day, for 3-10 days	• For long-term treatment of severe persistent asthma, administer single dose in a m. either daily or on alternate days (alternate-day therapy may produce less adrenal suppression) If daily doses are required one study suggests improved efficacy and no increase in adrenal suppression when administered at 3.00 p.m. (Beam et al. 1992) • Short courses or "bursts" are effective for establishing control when initiating therapy or during a period of gradual, deterioration • The burst should be continued until patient achieves 80% PEF personal best or symptoms resolve. This usually requires 3-10 days but may require longer. There is no evidence that tapering the dose following improvement prevents relapse.
Prednisolone	5mg tablets 5mg/5cc, 15mg/5cc			
Prednisone	1,2.5,5,10,20,25mg tablets 5mg/cc,5mg/5cc			

Management of Respiratory Tract Diseases & ENT

Usual Dosages For Long - Term-control Medications

Cromolyn And Nedocromil:

Cromolyn	<ul style="list-style-type: none"> • MDI 1mg/puff • Nebulizer Solution 20mg/ampoule 	2-4 puffs tid-qid	1-2 id-qid 1 ampule tid- qid	<ul style="list-style-type: none"> • One dose prior to exercise or allergen exposure provides effective prophylaxis for 1-2 hours
Nedocromil	MDI 1.75mg/puff	2-4 puffs bid- qid	1-2 puffs bid-qid	<ul style="list-style-type: none"> • One dose prior to exercise or allergen exposure provides effective prophylaxis for 1-2 hours

Long- Acting Beta,-Agonists:

Salmeterol	<ul style="list-style-type: none"> • Inhaled MDI 21 mcg/puff. • DPI 50 mcg/ blister 	2 puffs q 12 hours. 1 blister/12 hours.	1-2 puffs q 12 hours. 1 blister/ 12 hours.	<ul style="list-style-type: none"> • May use one dose nightly for symptoms. • Should not be used for symptom relief or for exacerbations.
Formetrol fumarate	12 mcg/cap	1 capsule q 12 hours for inhalation	1 cap q 12 hours	

MethyLxanthines:

Theophylline	Liquids, Sustained-Release tablets And capsules	Starting dose 10mg/kg/day up to 300mg max, usual max 800mg/day	Starting dose 10mg/kg/day usual max: <ul style="list-style-type: none"> • < 1 year of age: 0.2 (age in weeks) +5 =mg/kg/day • >1 year of age: 16mg/kg/day 	<ul style="list-style-type: none"> • Adjust dosage to achieve serum concentration of 5-15 mcg/ml at steady- state (at least 48 hours on same dosage) • Due to wide inter patient variability in theophylline metabolic clearance, routine serum theophylline level monitoring is important.
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Table. 9: Continued: Usual Dosage for Quick – Relief Medication in "Asthma"

Usual Dosages For Quick-relief Medications				
Medication	Dosage form	Adult Dose	Child Dose	Comments
Short-Acting inhaled Beta -Agonists				
Salbutamol	MDI 100 mcg/puff,	• 2puffs/ 5 minutes	• 1-2 puffs 5 minutes prior to exercise	• An increasing use or lack of expected effect indicates diminished control of asthma • Not generally recommended for long term treatment. Regular use on a daily basis indicates the need for additional long-term-control therapy. • Differences in potency exist so that all products are essentially equipotent on a per puff basis, • May double usual dose for mild exacerbations. • Nonselective agents (i.e, epinephrine, isoproterenol, metaproterenol) are not recommended due to their potential for excessive cardiac stimulation, especially in high doses.
Terbutaline	100 mcg/puff	• Prior to exercise		
Anticholinergics				
Ipratropium	MDI 18 mcg/puff, 200 puffs	2-3 puffs q 6 hours	1-2 puffs q 6 hours	Evidence is lacking for anticholinergics producing added benefit to beta ₂ - agonists in long-term asthma therapy.
	Nebulizer solution 0.25mg/ml (0.025%)	0.25mg q 6 hours	0.25-0.5mg q 6 hours	
Systemic corticosteroids (Applies to all three systemic corticosteroids)				
Methylprednisolone	2,4,8,16,32mg tablets	• Short course "burst" 40-60mg/day as single or 2 divided doses for 3-10 days	Short course "burst" 1-2mg/kg/ day. maximum 60mg/day,for 3-10 days	• Short courses or "bursts" are effective for establishing control when Initiating therapy or during a period of gradual deterioration. • The burst should be continued until patient achieves 80% PEF personal best or symptoms resolve. This usually requires 3-10 days but may require longer. There is no evidence that tapering the dose following improvement prevents relapse.
Prednisolone	5mg tabs, 5mg/5cc,15mg/5cc			
Prednisone	1, 2.5, 5, 10, 20, 25mg tabs, 5mg/cc, 5mg/5cc			

Health Education for Patient and Family:

- Counsel regarding danger of over use of inhalers. Patient should be using no more than 1 canister of each type at the same time (200 metered dose inhalations of a β -agonist or an equivalent amount of a dry powder formulation).
- Discuss that patient should avoid aspirin and nonsteroidal anti-inflammatory drugs as about 5-20% of adults with asthma experience severe and even fatal exacerbations of asthma while taking these drugs.
- If patient does not have egg allergy, remind patient of need for yearly influenza vaccine.
- Develop action plan on when and how to take rescue actions, especially for patients with a history of severe exacerbations.

Follow Up

1. For acute exacerbations requiring nebulizer and/or corticosteroids, see patient within 24 hours and then re-evaluate in 3-5 days.

Assessment of progress in chronic asthma by GP after 2 weeks after attack and every 3 months if chronic asthma. Ask about:

- Number of nocturnal attacks per week
- The length taken to clear the chest in the morning
- Absence from work or school
- Consumption of bronchodilator preparation

2. After exacerbation has resolved completely, schedule follow up visits every 1-3 months.

A. Asthma and Pregnancy

Asthma may worsen during pregnancy. Most drugs used to treat asthma with the exception of alpha-adrenergic compounds, brompheniramine and epinephrine, show no risk to the foetus. Corticosteroids should be instituted when necessary. Exacerbations should be treated aggressively and effectively to prevent fetal hypoxia.

Management of Acute Severe Asthma:

Assessing Severity

Manifestations of severe asthma include:

- a. Recent emergency room visits
- b. Current oral corticosteroid use
- c. Previous attacks that have required the use of oral corticosteroids, a previous episode of respiratory failure seizures with asthma attacks have been associated with severe and potentially fatal asthma.

During Physical Examination, a Severe Attack is Suggested By

- Respiratory distress at rest
- Difficulty in speaking in sentences
- Diaphoresis, or agitation
- Patients with depressed mental status require intubations
- A silent chest- decreased intensity of wheezing is a reliable indicator of the severity of an attack.
- A respiratory rate greater than 28 breaths per minute
- A pulse greater than 110 beats per minutes
- Apulsus paradoxus greater than 12mm indicates severe episode. Subcutaneous emphysema should alert the examiner to the presence of a pneumothorax or pneumomediastinum

- Impending respiratory muscle fatigue may cause depressed respiratory effort, paradoxical diaphragmatic movement, and alternating abdominal and rib cage breathing. (abdominal alternans)

Refer

Refer to Hospital

- Transfer in ambulance with: Supplemental oxygen
- Bronchodilators
- Inhaled beta₂ adrenergic agonists
- Systemic corticosteroids.

(Methylprednisolone is the drug choice for IV therapy Intravenous methylprednisolone, 125mg, given in the emergency room (on initial presentation) IV state of hydrocortisone 100mg).

Follow Up

Close follow-up is required for patients discharged from the hospital or emergency room because baseline airway hyper activity persists for 4-6 weeks after an asthma exacerbation. A return visit to the physician should be scheduled within 5-7 days.

Chronic Obstructive Pulmonary Disease; COPD

Definition:

Chronic obstructive pulmonary disease is a disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually both progressive, associated with an abnormal inflammatory response of the lungs to noxious particles or gases and associated with systemic manifestations.

Clinicopathological Definition

Chronic Bronchitis:

Cough productive of sputum for at least 3 months of two consecutive years excluding other cardiopulmonary diseases.

Emphysema:

An enlargement of the terminal airspace due to destruction of the alveolar wall without fibrosis.

Etiology and Risk Factors for COPD

Host factors:

- Genes (e.g. Alpha 1-antitrypsin deficiency)
- Hyperresponsiveness
- Lung growth

Exposure:

- Tobacco smoke
- Occupational dusts and chemicals
- Infections
- Socioeconomic status
- Indoor and outdoor pollution

Objectives of COPD Management

- Prevent disease progression
- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent and treat exacerbation
- Prevent and treat complications
- Reduce mortality
- Minimize side effects from treatment

Four Components of COPD Management:

- I- Assess and monitor disease
- II- Reduce risk factors
- III- Manage stable COPD
 - a. Education
 - b. Pharmacologic
 - c. Non-pharmacologic
- IV- Manage exacerbations

Assess and Monitor Disease

Diagnosis of COPD is based on a history of exposure to risk factors and the presence of airflow limitation that is not fully reversible, with or without the presence of symptoms.

Symptoms Typical of COPD:

- History for heavy smoking for many years
- Cough and sputum production for many years
- Cough often present only on walking at first, later cough occurs throughout the day
- Sputum usually mucoid-becomes purulent with exacerbation of disease but not excessive.

- Cough and sputum often worse in winter due to infection
- Insidious onset of breathlessness on exertion with wheezing or tightness of chest.
- Some develop increasingly severe exacerbation of disease leading to chronic respiratory failure - the blue bloater type of COPD
- Others have little or no sputum or hypoxia at rest, but breathlessness and wheezing is severe and emphysema is prominent-the pink puffer type of COPD
- Most patients of COPD present with a mixed pattern.

Physical Examination:

- Large barrel shaped chest.
- Prominent accessory respiratory muscle in the neck
- Low, flat diaphragm causing costal margin retraction on inspiration.
- Diminished breath sound, distal heart sound
- Prolonged expiration with generalized wheezing
- Depressed liver, which is not enlarged.

The blue bloater type of COPD may also have:

- Cyanosis at rest or mild exertion
- Oedema of ankles
- Crackles at lung bases
- Loud second heart sound in pulmonary area (sometimes difficult to hear)

The pink puffer type of COPD may also have:

- Expiratory pursed- lip breathing
- Thin body built
- Tendency to lean forward over a support to assist breathing

Differential Diagnosis of COPD:

1. Asthma
2. Congestive heart failure
3. Bronchiectasis
4. Pulmonary T.B.

Assessment of Severity:

For severity assessment, referral to a chest specialist has to be done for spirometry.

According to spirometric results, COPD can be divided into 4 stages:

Stage	Characteristics
0: At Risk	Normal spirometry Chronic symptoms (cough, sputum production)
I: Mild COPD	FEV1 / FVC < 70% FEV1 > 80% predicted With or without chronic symptoms (chronic sputum production)
II: Moderate COPD	FEV1 / FVC < 70% 30% < FEV1 < 80% predicted
III: Severe COPD	FEV1 / FVC < 70% FEV1 < 30% predicted or FEV1 < 50% predicted plus respiratory failure or clinical signs of chronic heart failure

Chest x-Ray:

In mild COPD, the plain chest x-ray may be normal. With advanced emphysema changes include:

- Large volume lungs (hyperinflation)
- Low flat diaphragm
- Rapid tapering of the vascular markings
- Thin heart shadow
- Enlarged retro-sternal air space

Chest x-ray is valuable in excluding alternative diagnosis and / or complications.

Diagnosis of Right Heart Failure or Cor Pulmonale;

Elevation of the jugular venous pressure and the presence of pitting ankle edema are often suggestive of cor pulmonale in clinical practice.

Firm diagnosis of cor pulmonale can be made through referral for echocardiography.

Hematocrit:

Polycythemia can develop in the presence of arterial hypoxemia, especially in continuing smokers. Polycythemia can be identified by hematocrit > 55%.

Reduce Risk Factors

- Reduction of total personal exposure to tobacco smoke, occupational dust and indoor and outdoor pollutants.
- Smoking cessation is the single most effective and cost effective intervention to reduce the risk of developing COPD and stop its progression.

Manage Stable COPD

1. Patient Education:

Health education can play a role in improving

skills, ability to cope with illness, and health status. It is effective in accomplishing certain goals, including smoking cessation.

a) Stage 0: At risk: information and advice about reducing risk factors e.g. smoking cessation, reduction of indoor pollution, and reduction of occupational exposure.

b) Stage I and II: Mild to Moderate COPD: above topics plus

- i. Information about the nature of COPD
- ii. Instructions on how to use inhalers and other treatments
- iii. Recognition and treatment of acute exacerbations
- iv. Influenza vaccination

c) Stage III: Severe COPD: refer to the specialist

2. Bronchodilators:

- a) Bronchodilator medications are central to the symptomatic management of COPD.
- b) Inhaled therapy is preferred
- c) The choice between Anticholinergics, Beta₂ agonist, Theophylline or combination therapy depends on availability and individual response in terms of symptom relief and side effects.
- d) Long acting inhaled bronchodilators are more convenient.
- e) **Stage I:** Mild COPD: short acting bronchodilators as needed e.g. Salbutamol inhaler
- f) **Stage II and III:** refer to specialist to prescribe treatment, then do the patient follow up

- Present treatment regimen

3. Inhaled bronchodilators, theophylline and systemic, preferably oral glucocorticosteroids are effective for the treatment of COPD exacerbations.

4. Patients experiencing exacerbations with clinical signs of airway infection may benefit from antibiotic treatment.

5. Signs of severity are:

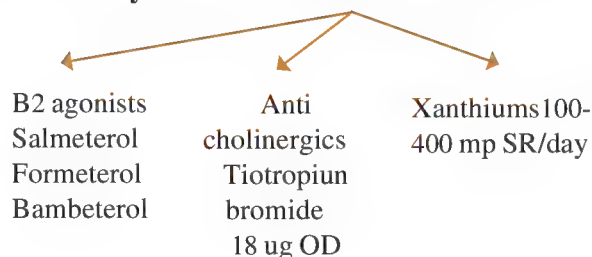
- Use of accessory respiratory muscles
- Paradoxical chest wall movement
- Worsening or new onset central cyanosis
- Development of peripheral oedema
- Hemodynamic instability
- Signs of right heart failure
- Newly occurring arrhythmia
- Reduced alertness

6. If you find any of signs of severity, refer to hospital immediately

Commonly Used Bronchodilators in COPDS

Algorithm for management of acute exacerbation of COPD

Commonly used Bronchodilators in COPDS



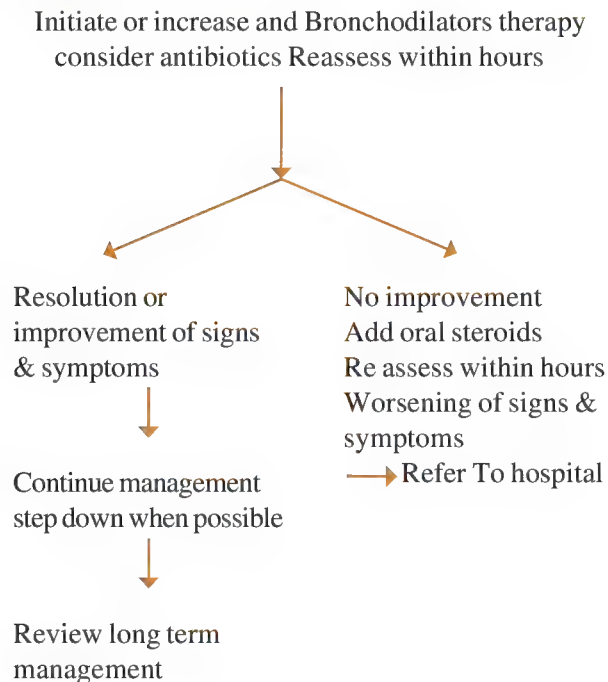
Manage Exacerbations

1. Increased breathlessness, the main symptom of an exacerbation, is accompanied by wheezes and chest tightness, increased cough and sputum, and fever.

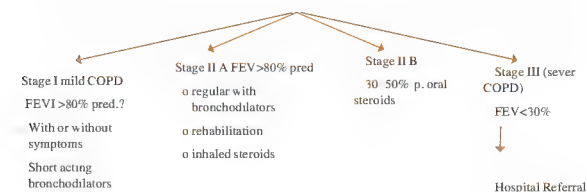
2. You should ask the patient about:

- Duration of worsening or new symptoms
- Number of previous episodes

Algorithm for management of acute exacerbation Of COPD



Management of COPD (According to severity)



Mucolytics and Expectorants May be Used in Patients with Tenacious Secretions

Oxygen:

Low-flow oxygen 2-3 L/min is indicated to maintain oxygen tension P_{aO_2} in the range of 55-60mm hg. It could be given by nasal cannula or by continuous positive airway pressure mask (CPAP) in severe exacerbation

Mechanical ventilation is indicated in patients with hypercapnic respiratory failure.

Smoking Cessation

Primary Health Care Physician must:

- 1) Ask the patient if he is a smoker or not in every visit

- 2) Know how to do brief counseling asking about:

- (a) Is his patient a smoker or not?
- (b) For how long is the patient smoking?
- (c) How many cigarettes a day (or shisha hags)?
- (d) Is the patient considering quitting?
- (e) Number of past quit attempts
- (f) Does the patient start smoking within 30 minutes of waking?
- (g) Provision of advise tailoring the message of smoking hazards to the patient's condition and the advice to quit. This can be achieved through the 5 As:

- Ask Systematically identify all tobacco users at every visit
- Advice Strong urge all tobacco users to quit
- Assess Determine willingness to make a quit attempt
- Assist Aid the patient in quitting
- Arrange Schedule follow up contact
- Provision of self help material

- 3) Refer to smoking cessation clinic (in the governorates that has such clinics) if the patient is willing to quit

- (a) With a referral form that includes:

- (i) Referring clinic
- (ii) Name of referring doctor
- (iii) Patient health status (diagnosis)
- (iv) Reason for referral

- i. Health reason
- ii. Preoperative
- iii. For prevention of complications of smoking

- (b) Give the advice about the hazards of passive smoking

Lung Cancer

Bronchogenic carcinoma is responsible for >30% of cancer deaths in males and >25% in females.

Tobacco smoking is implicated in 85% of cases; second-hand smoke is responsible for approximately 20% of cases. Environmental agents

as radon exposure, asbestos, uranium and chromium are associated with increased risk of lung cancer. Environmental asbestos exposure is recorded with increasing frequency in Egypt and is responsible for a considerable number of malignancies especially pleural tumors (mesothelioma), and lung cancer in a minority of cases.

A proper environmental history and smoking history are vital to suspect cases of chest malignancies

Early diagnosis of lung cancer is crucial for cure and good prognosis.

Any patient with chest complaints for more than two weeks should be subjected to chest radiography and referred for consultation to rule out the possibility of lung cancer.

■ Management of GIT

5

Management of GIT

GIT

• Upper GIT Symptoms:

- Anorexia
- Nausea and vomiting
- Indigestion
- Regurgitation
- Heart burn
- Dysphagia
- Hematemesis
- Melena
- Hiccups

• Lower GIT Symptoms:

- Diarrhea: Acute-Chronic
- Steatorrhea
- Constipation
- Fresh rectal bleeding
- Borborygmi
- Meteorism

• Abdominal Symptoms:

- Abdominal pain: Acute-Chronic
- Flank pain
- Generalized Abdominal Swelling:
 - Ascites
 - Flatulence
- Focal Abdominal Swelling.
 - Hepatomegaly
 - Splenomegaly:
 - Flank mass

Anorexia

Anorexia

Anorexia=loss of appetite

See algorithm of anorexia and loss of weight in T.B. section.

Anorexia Nervosa:

Main clinical criteria are:

- Body weight more than 15% below standard weight or BMI < 17.5
- Weight loss is self induced
- Distortion of body image; patient regards herself as fat
- Morbid fear of fatness
- Amenorrhea

Treatment:

- Establish a good relationship with the patient
- Provide balanced diet
- Eliminate purgative and /or laxative and vomiting
- Cognitive behavioral or dynamic psychotherapeutic lines

Then you have to exclude drug cause then you have to refer all other cases for proper diagnosis especially persistent cases and those with significant weight loss

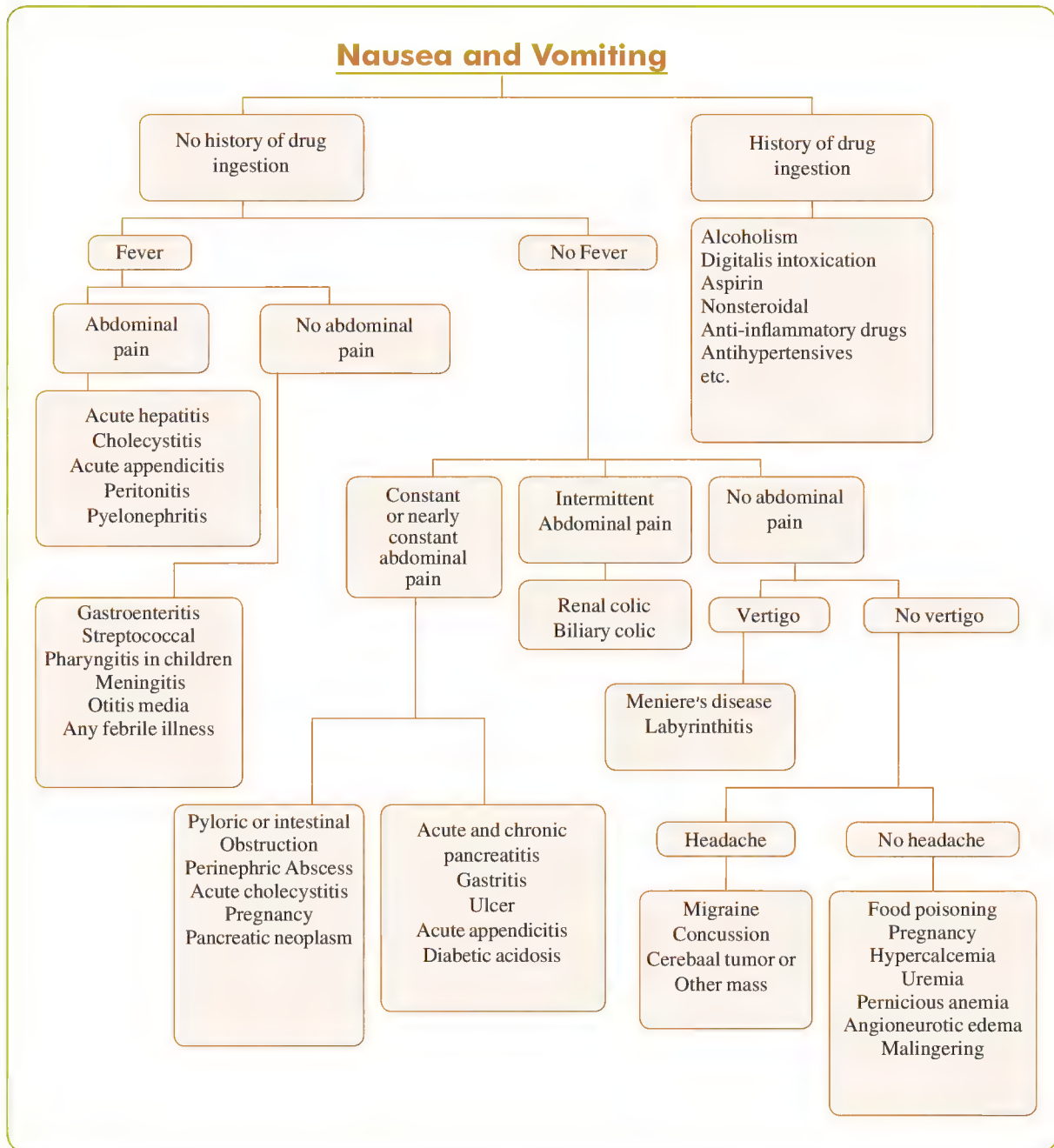


Figure "6": Flow Chart Diagram For Differential Diagnosis of Nausea and Vomiting

Nausea and Vomiting:

Check drugs of the patient

- **Vertigo:** illusion of movement; It is sense of rotation of self or of surrounding.
- **Meniere's disease:**

It is recurrent attacks of Tinnitus & Vertigo ending in deafness

On examination, there is nystagmus

Treatment: Rest

Cinnarizine: For the control of travel sickness

Adults and the elderly, and children over the age of 12: two tablets (15mg of cinnarizine tablets) two hours before traveling and 1 tablet every eight hours during the journey.

Children aged 5-12 years:

One tablet (15mg of cinnarizine tablet) two hours before traveling and ½ tablet every eight hours during the journey

Ménière's disease

Adults and the elderly, and children over the age of 12:

Two tablets(15mg of cinnarizine tablets)
three times daily

Children aged 5-12 years:

One tablet (15mg of cinnarizine tablet)
three time

Resistant cases refer to surgery

Migraine:

It is recurrent headache associated with visual and gastrointestinal disturbance

Treatment:

- Relief anxiety.
- Avoid dietary factors, chocolate, cheese.
- Avoid contraceptive pills.

During the attack:

- With aura, with onset of headache, ergotamine.
- Analgesics: Paracetamol:

Adults and children ≤ 12 years: Two tablets every 6 hours. No more than a total of 8 tablets in any 24 hour

- Antiemetic: Metoclopramide: 10mg IV or orally 20 to 30 minutes before or with a simple analgesic, NSAID, or ergotamine derivative
- Serotonin agonists.

In between attacks:

Propranolol 10mg tds (up to 40-80mg tds)

beta-adrenergic blocker Useful for migraineurs with concomitant hypertension, angina pectoris, and thyrotoxicosis.

A long acting form of this drug (Inderal LA) has been introduced.

Its once-daily dosage of 60, 80, 120 or 160mg enhances patient compliance

* Should not be withdrawn abruptly in patients with coronary heart disease as this action could exacerbate coronary ischemia and eventually produce unstable angina or myocardial infarction

Functional(nonulcer) dyspepsia:

It is the second most common functional GIT disorder after irritable bowel syndrome. Patient can present with a spectrum of symptoms including upper abdominal pain/discomfort, fullness, early satiety, bloating and nausea. These patients have no structural abnormalities.

Alarm Features:

- Dysphagia
- Weight loss
- Anorexia
- Hematemesis or melena
- Dyspepsia related to exertion
- Anemia
- Blood in stools

Treatment:

- Reassurance, explanation and life style modification.
- Reduce intake of fat, coffee, alcohol and cigarette smoking.
- H. pylori eradication: omeprazole 20mg+ metronidazole 500mg + amoxicillin 1 g twice /d for 2 wk
- Antisecretory agents:1-Omeprazole: The adult doses of omeprazole 20 to 40mg daily.

In children less than 2 years of age: The safety and effectiveness have not been established

Breast feeding: Omeprazole is excreted in human milk and, because of its potential serious adverse reactions in nursing infants, a decision should be made whether to discontinue breast feeding or to discontinue the drug

2- Metoclopramide.

- **Esophageal regurgitation:** is reflux of gastric contents **Avoid precipitating factors:**

- Stop alcohol, stop smoking, large meal, fat, chocolate, and coffee.
- Raise head of the bed at night
- Simple antacids: Mucogel® Magnesium hydroxide 195mg, dried aluminium hydroxide 220mg/5mL (low Na+): Adults and children over 12 years 10-20mL 3 times daily, 20-60 minutes after meals, and at bedtime or when required; Children under 12 years not recommended

- Metoclopramide
- Treatment of H. pylori

Esophageal Spasm:

Abnormal esophageal motility

Treatment:

1-Antispasmodics: Atropine sulphate, Tablets (0.6 mg) 0.6-1.2mg at night.

Ampoules (0.6 mg) 0.6-1.2 mg

* Antimuscarinics should not be used in acute abdomen to relieve the colics as this could mask the underlying serious pathological lesion

OR Atropine substitutes: Propantheline bromide: Tablets: 15 mg 3 times daily at least 1 hour before meals and 30 mg at night, Maximum daily dose 120 mg.

2-Nitrates: Nitroglycerin Relaxes smooth muscle all over the body, including those of the lower esophageal sphincter and esophageal wall..

0.4mg sublingual 30 min ac 2.5-6.5mg, **Slow release tablet tid; not to exceed 9mg**

3-Calcium channel blockers: Nifedipine (Adalat): 10-30mg cap tid/qid 30 min ac; not to exceed 120mg/d

- Refer Patients With Significant Body Weight Loss.

Peptic Ulcer:

Chronic ulcers in stomach, duodenum or lower part of esophagus.

Treatment:

- Stop smoking
- Proton pump inhibitors gastrazole 20mg twice/day for 6 wk
- Treatment of H.pylori
- Patient with gastric ulcer must be re-endoscoped at 6 wk to exclude malignant tumor

Gastritis

Inflammation of gastric mucosa

Commonest cause is use of aspirin, NSAIDs & alcohol

Treatment: Stop NSAIDs, alcohol

Prophylaxis therapy with omeprazole for all high risk patients:

- Over 65 yrs.
- Those with peptic ulcer history

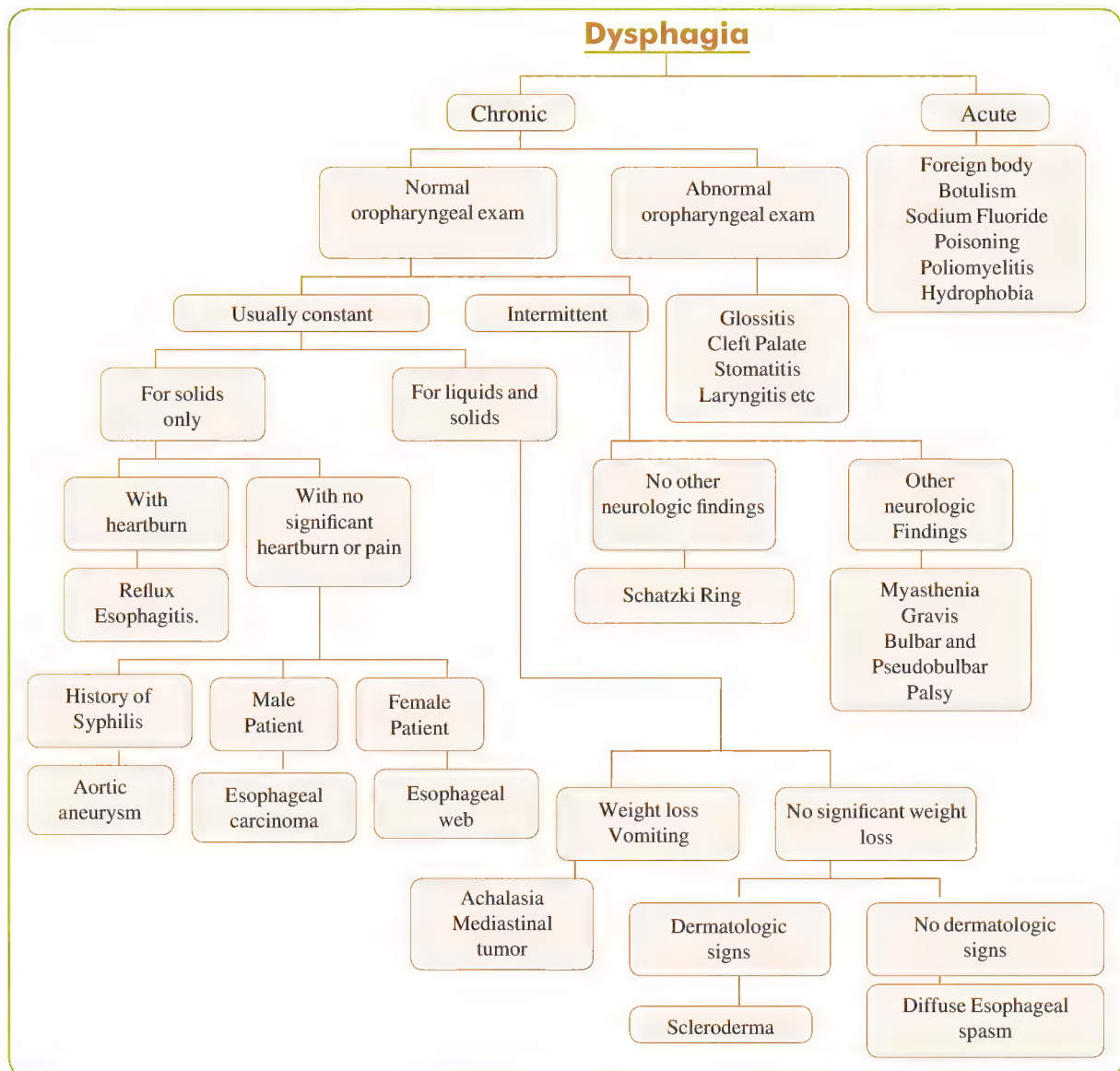


Figure "7": Flow Chart Diagram For Differential Diagnosis of Dysphagia

- Corticosteroid therapy
- Anticoagulant therapy
- In patients with arthritis use Cox-2 inhibitors

Refer:

- Patient's symptoms are related to exertion.
- Associated with other significant symptoms.

Dysphagia

Difficulty in swallowing

Myasthenia Gravis:

Acquired condition that is characterized by weakness and fatigability of proximal limb, ocular and bulbar muscles.

Treatment: Pyridostigmine:

Adults Oral: 30-120mg at intervals / day

Children over 6 years Oral:

Initially 60mg increased or decreased gradually (usual dose 30-360mg/day)

Children below 6 years Oral:

Initially 30mg increased gradually (usual dose 30-360mg/day)

Bulbar and Pseudo Bulbar Palsy:

Bulbar palsy: LMNL of cranial nerves that supply the bulbar muscles.

Pseudo bulbar palsy: bilateral UMNL of cranial nerves that supply the bulbar muscles leading to:

- o Dysarthria
- o Dysphagia
- o Nasal regurgitation and nasal tone

Achalasia:

Achalasia is a disease characterized by aperistalsis in the body of the esophagus and failure of relaxation of the lower esophageal sphincter on initiation of swallowing

Treatment:

Refer for endoscopic dilatation of lower esophageal sphincter or surgery

Scleroderma:

Diminished peristalsis due to replacement of the smooth muscle layers of fibrous tissues.

Refer all patients for proper diagnosis and management

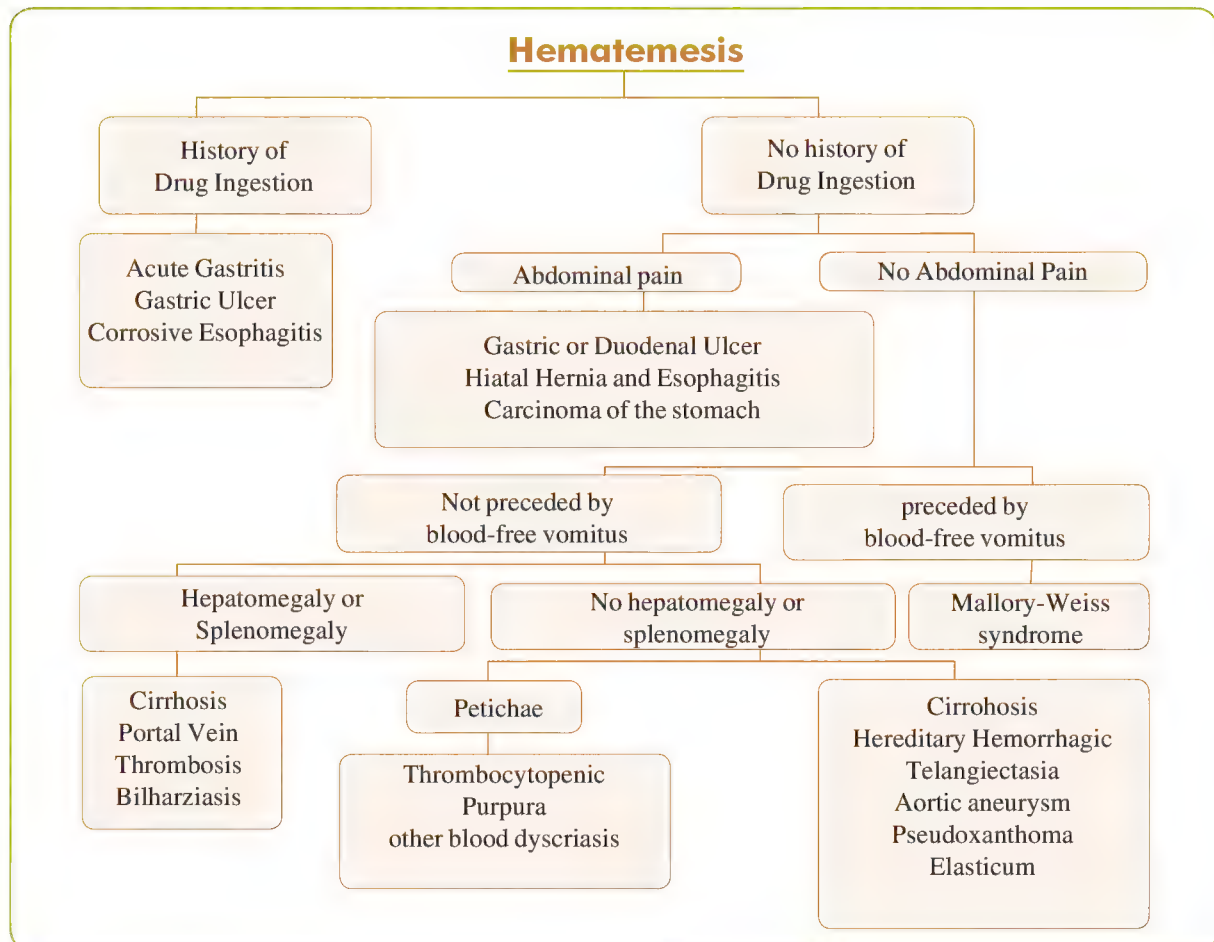


Figure "8": Flow Chart Diagram For Differential Diagnosis of Heamatemesis

Mallory-weiss Syndrome:

Linear mucosal tear occurring at esophageal junction and produced by a sudden increase in intra-abdominal pressure.

Most patient stop spontaneously

Rarely, surgery for the tear will be required.

Hereditary Hemorrhagic Telengectasia:

It is rare disorder with autosomal dominant inheritance. Dilatation of capillaries and small arterioles produces small red spots that blanch on pressure in the skin and mucous membrane

Pseudoxanthoma Elasticum:

It is a rare disorder characterized by abnormalities in collagen and elastic tissues affecting skin, eye and blood vessels. Skin is loose, lax and wrinkled associated with GIT bleeding.

Thrombocytopenia:

This is caused by reduced platelet production in the bone marrow or excessive peripheral destruction of platelets.

Refer for proper diagnosis and treatment.

Cirrhosis:

Cirrhosis results from the necrosis of liver cells followed by fibrosis and nodule formation.

Cirrhosis leads to portal hypertension and opening of portosystemic collaterals.

• Prevention of recurrent variceal bleeding:

The risk of recurrence is 60-80% over a 2 year period

Give oral propranolol in a dose sufficient to reduce resting pulse rate by 25%

Refer for endoscopic treatment & transjugular portosystemic stent shunts

Most Important Causes of Hematemesis:

- o Bleeding oesophageal varices
- o Bleeding peptic ulcer.
- o Acute gastric ulcer: NSAID ingestion.
- o Cancer of UGIT.

What To Do If Active Hematemesis:

- Insert IV line: give blood or plasma if available. if not give plasma expander or saline.
- Maintain air way open.
- Refer to emergency unit of nearest hospital.

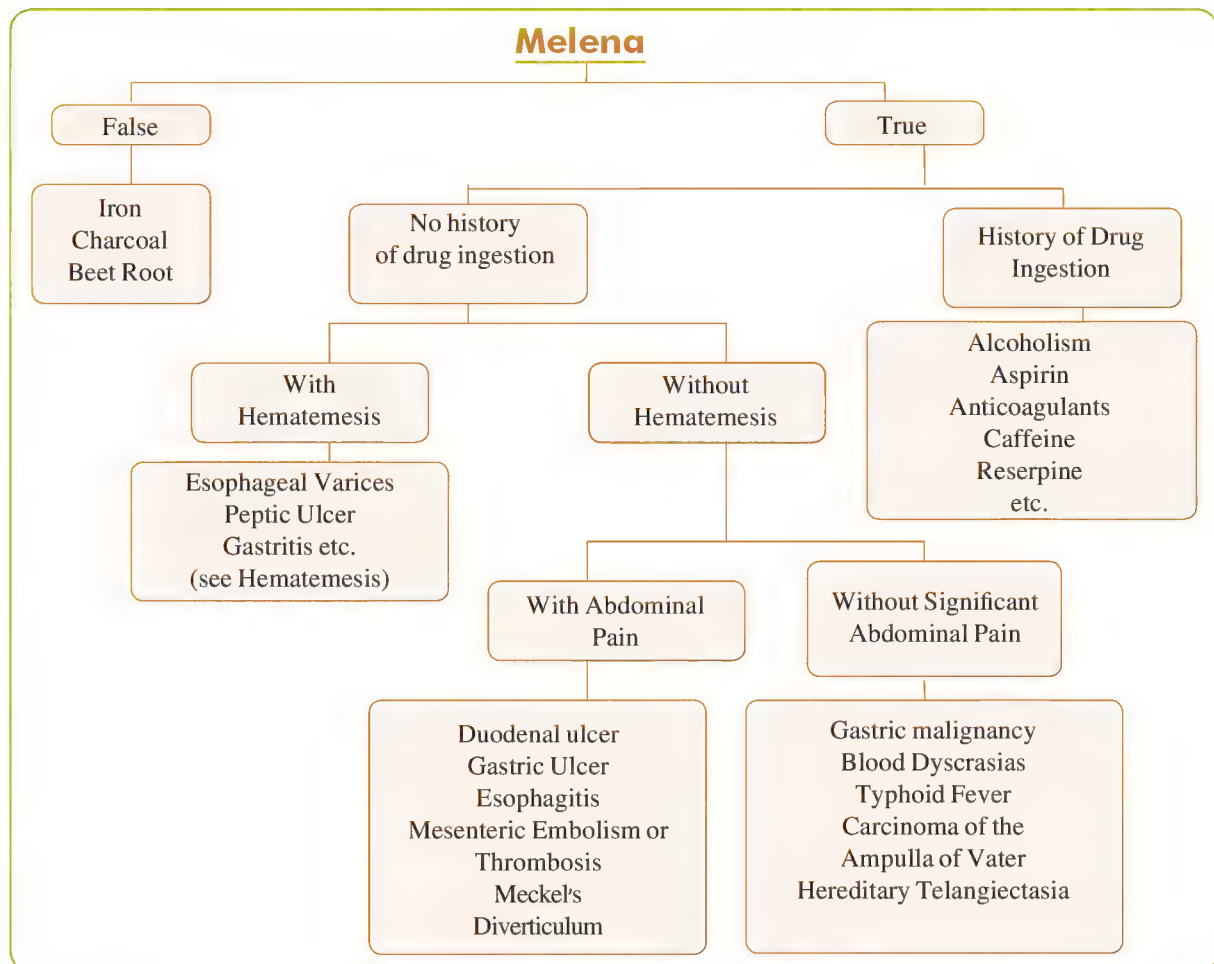


Figure "9": Flow Chart Diagram For Differential Diagnosis of Melena

Melena

Passage of black tarry stool due to UGI bleeding

Refer as in cases of hematemesis

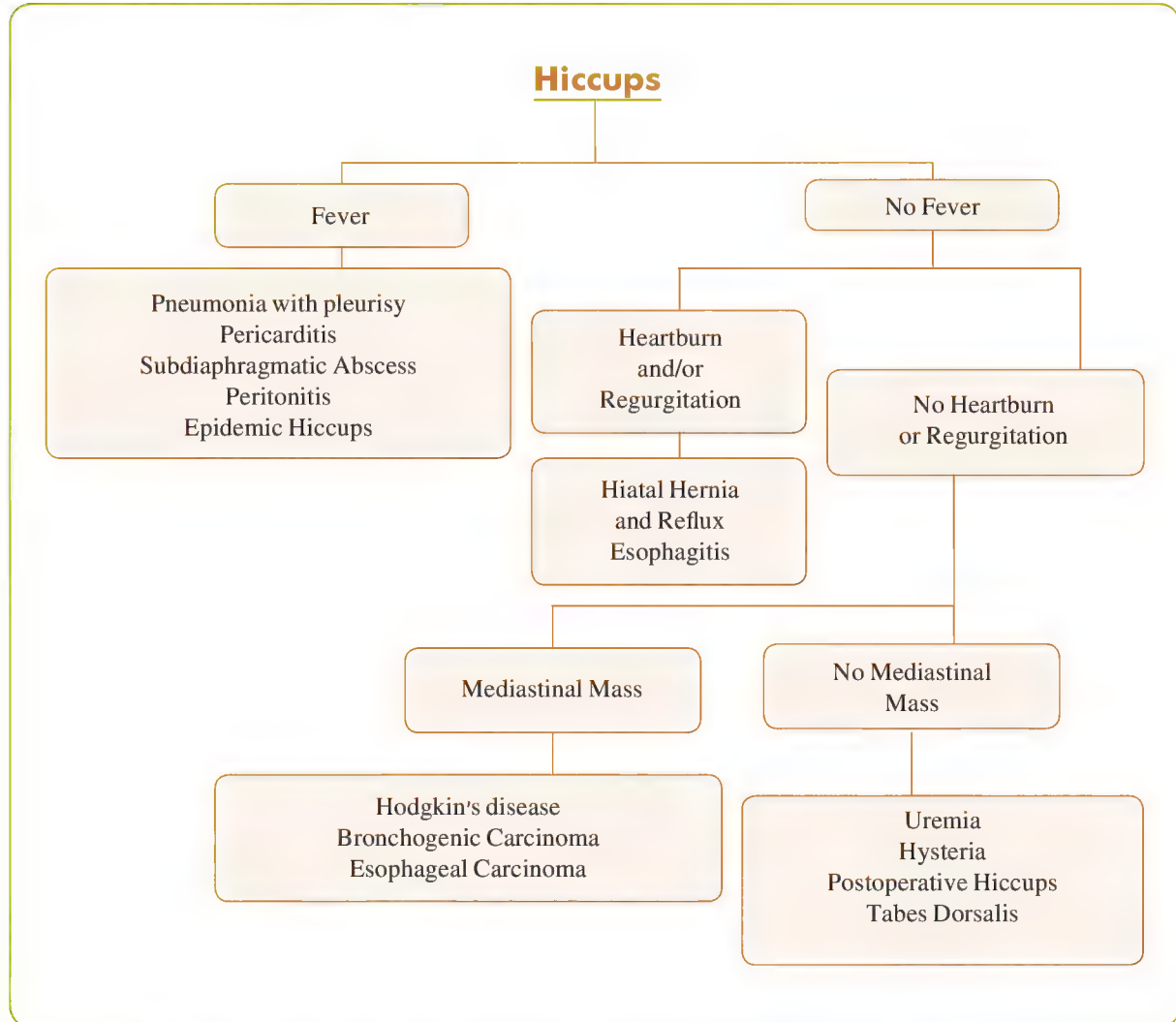


Figure "10": Flow Chart Diagram For Differential Diagnosis of Hiccups

- **Hiccups** are due to involuntary diaphragmatic contractions with closure of the glottis. This is a result of a diaphragmatic irritation or a metabolic cause.

Treatment:

Chlorpromazine 50mg three times daily or diazepam 5mg three times daily.

Cause should be treated if possible.

Chlorpromazine: Adults: Oral: 25-50mg 3- 4 times / day

IM: 25- 50mg every 3-4 hours (if oral dose does not work)

Diazepam: (Anxiolytic, hypnotic, anticonvulsant, muscle relaxant.): **Adult** oral 2-5mg tds

Tabes Dorsalis:

Demyelination in the dorsal roots leading to:

- Lightning pain
- Ataxia
- Charcot joints
- Argyl Robertson pupils
- Ptosis and optic atrophy

Refer Persistent Cases

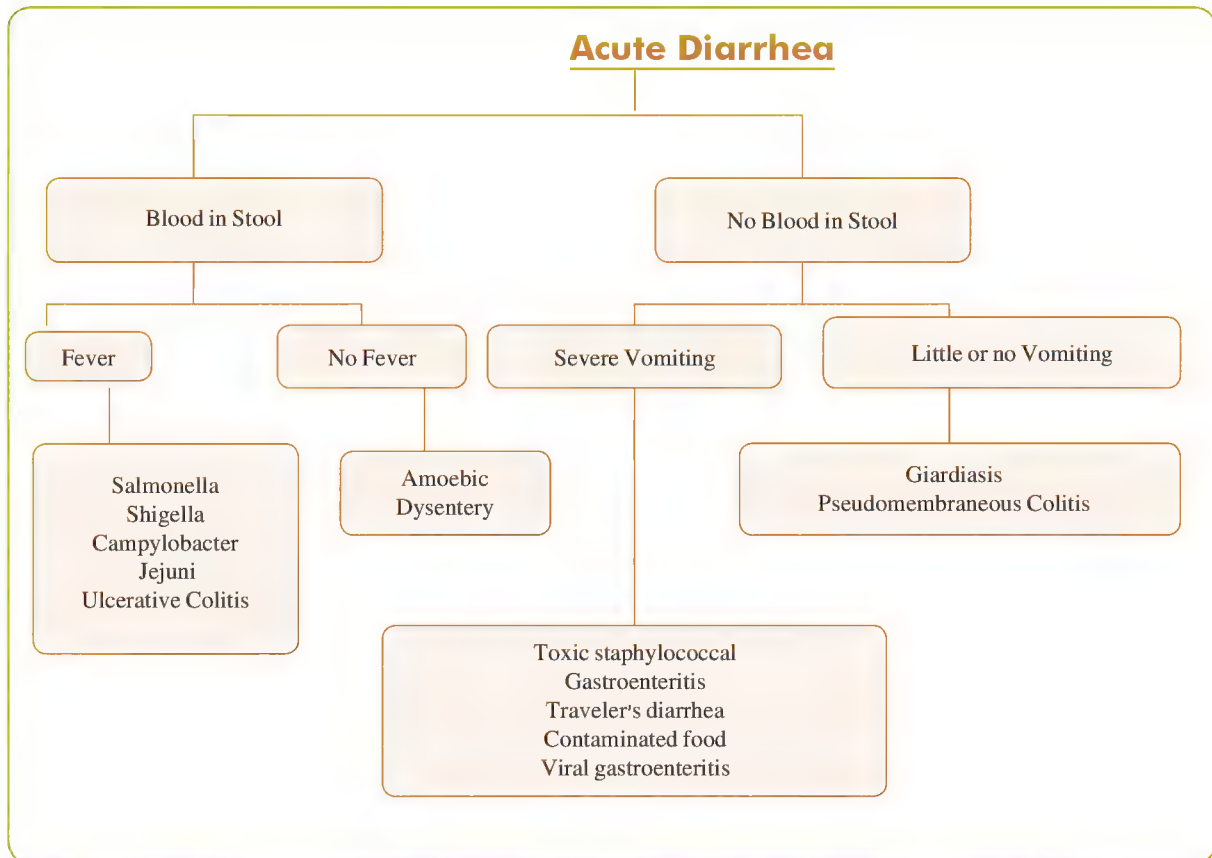


Figure "11": Flow Chart Diagram For Differential Diagnosis of Acute Diarrhea

Diarrhea:

Frequent passage of large amount of soft stool

Children with acute diarrhea refer to IMCI (integrated management of childhood illness)

• **Please Do:**

- o Stool examination
- o Stool culture

• **Start Treatment According To Stool Examination.**

- o If there's dehydration give oral fluid & electrolyte replacement
- o **Giardiasis & Amoebiasis:** see Helminthes section
- o **Salmonella:** Ciprofloxacin 500mg twice daily
*Not to be given in children under 12 years
- o **Shigella:** Amoxicillin or Co-Trimoxazole
- o Co-Trimoxazole: **Adults:** Oral 960mg 12/hrly, 480mg 12/hrly if treated more than 14 days, **Children:** Oral 6 w to 6 months: 120mg 12/hrly

6 months to 6 years: 240mg 12/hrly

6 years to 12 years: 480mg 12/hrly or Ciprofloxacin

- **Campylobacter jejuni:** Ciprofloxacin 500mg twice daily
- **Staphylococcus aureus:** (heat-stable toxins): symptoms usually subside within 24 hours.
- **Clostridium:** Metronidazole 500mg tds daily
- **Traveler's diarrhea:** it is usually benign and self-limiting can be treated by quinolone
- **Botulism:** treatment is usually supportive and antitoxins

If respiratory muscles are affected, refer to ICU for mechanical ventilation

- **Pseudo membranous colitis** (antibiotic-associated diarrhea):

Stop antibiotics ± metronidazole 500mg tds

If patient is not responding refer

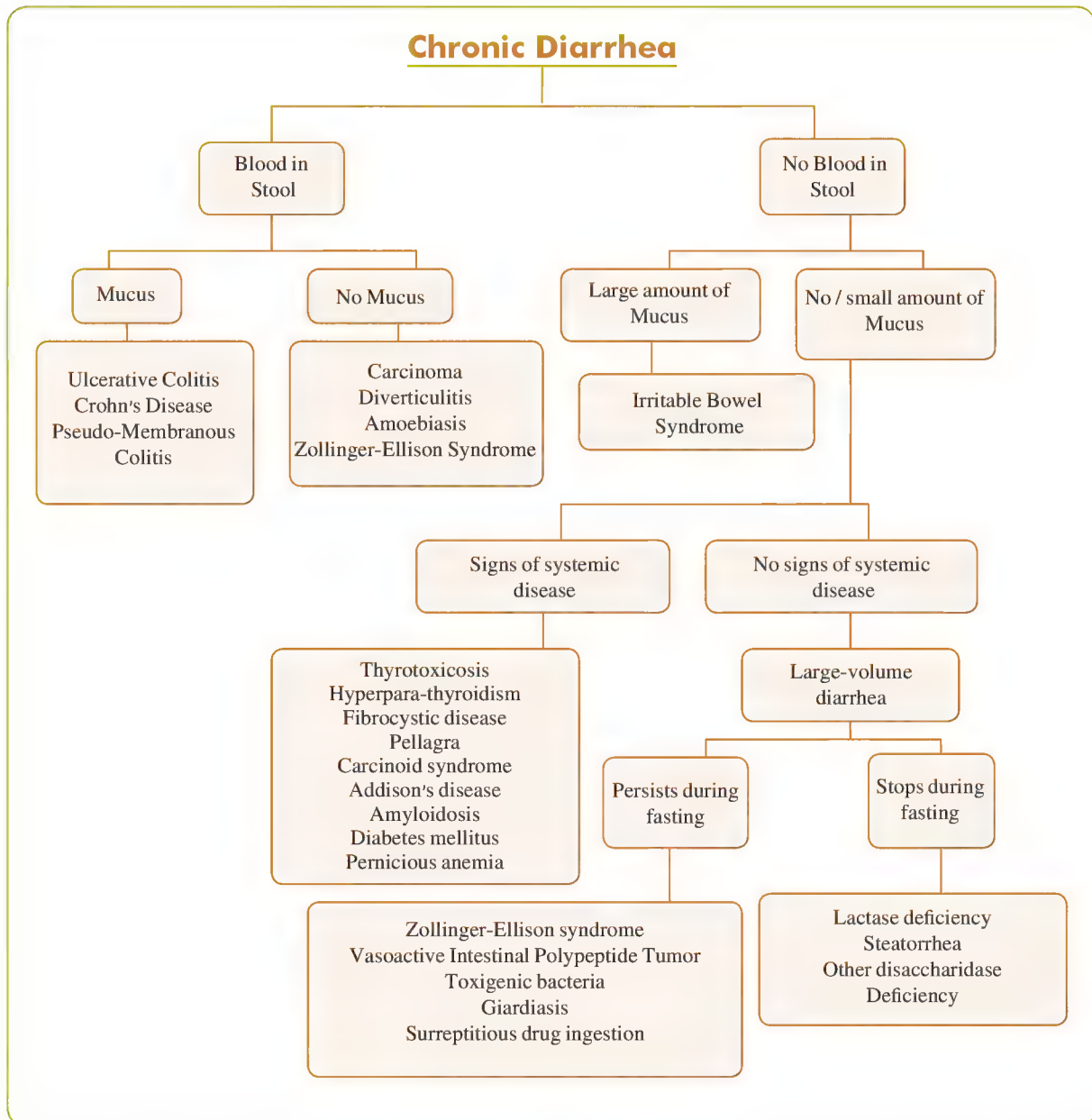


Figure "12": Flow Chart Diagram For Differential Diagnosis of Chronic Diarrhea

Inflammatory Bowel Disease

• Ulcerative Colitis:

Major symptoms are diarrhea with blood & mucus. General features include: malaise, lethargy & anorexia and apthous ulcers in the mouth

• Crohn's Disease:

Major symptoms are diarrhea, abdominal pain and weight loss

Refer for proper diagnosis and treatment

• Zollinger- Ellison Syndrome:

It is due to excessive gastrin secretion within endocrine pancreas leading to hyposecretion of gastric acid, leading to severe duodenal ulceration and chronic diarrhea

Treatment by high dose omeprazole, if not responding refer for surgery

• Irritable Bowel Syndrome:

Abdominal pain or discomfort associated with alteration in bowel habits with no organic cause.

It is the commonest functional GI disease

Symptoms supporting diagnosis of IBS:

- 3/d or < 3/week stool frequency
- Stools: lumps/hard or loose /watery stool
- Passage of mucus
- Bloating or abdominal distension

Management:

- Explore dietary triggers
- High fiber diet for constipation
- Antidiarrheal drugs for bowel frequency
- Smooth muscle relaxant for pain
- Reassurance
- Psychotherapy
- Antidepressant

• Carcinoid Syndrome:

Neoplasm of APUD cells of the intestine leading to bluish red flushing on face & neck, abdominal pain and recurrent watery diarrhea.

• Diverticulitis:

Diverticulosis: presence of diverticula in the colon
It occurs in 50% of patients over 50 years. They are frequent in the sigmoid. It is related to low fiber diet.

Diverticulitis implies inflammation of the diverticula

Acute diverticulitis is treated by Cephalosporin and Metronidazole

• Pellagra

It is found in people who eat only maize

It can also occur with INH therapy (B6 is needed for synthesis of nicotinamide from tryptophan)

Generalized malabsorption

Very low protein diet for renal disease

In Carcinoid syndrome & Pheochromocytoma

Clinical Picture:

- o Dermatitis: in exposed area to sun
- o Diarrhea: glossitis and angular stomatitis
- o Dementia, depression, apathy
- o Treatment: vit B complex

• Fibrocystic Disease:

There is alteration in the viscosity and tenacity of

mucus production at epithelial surfaces

- o It includes: bronchopulmonary infections
- o Pancreatic insufficiency
- o High sweat Na Cl concentration
- o Delayed puberty & skeletal maturity
- o Males are infertile

Treatment: Antibiotics for respiratory disease

Refer for treatment of pancreatic insufficiency & malnutrition

• Amyloidosis

It is a disorder of protein metabolism in which there is an extra cellular deposition of pathologic, insoluble fibrillar protein in organs & tissues.

Types:

AL Amyloidosis:

It is associated with lymphoproliferative disorders such as myeloma, and non-Hodgkin's lymphoma

Familial amyloidosis:

It leads to polyneuropathy, cardiomyopathy

Secondary amyloidosis:

It is related to chronic infections (TB, bronchiectasis & osteomyelitis) and chronic inflammation (rheumatoid, IBD, Familial Mediterranean Fever)

Clinical picture is related to the organ involved:

- o Kidneys: proteinuria & nephrotic syndrome
- o Heart: heart failure
- o Autonomic and sensory neuropathy
- o Hepatosplenomegaly
- o Macroglossia in 20%

Treatment:

Refer to treatment of underlying condition

• Pernicious Anemia:

It is a condition in which there is atrophy of the gastric mucosa with subsequent failure of intrinsic factor production and vitamin B12 malabsorption

It is associated with other autoimmune diseases

Clinical Picture:

- o Anemia
- o Red glazed tongue
- o Neurological: Sub acute combined degeneration (SACD), polyneuropathy, deep

sensory loss, pyramidal.

Treatment:

Vit.B12 1000 µM/twice /wk for 3 wks then every 3 months for the rest of the patients' life

Refer for further evaluation.

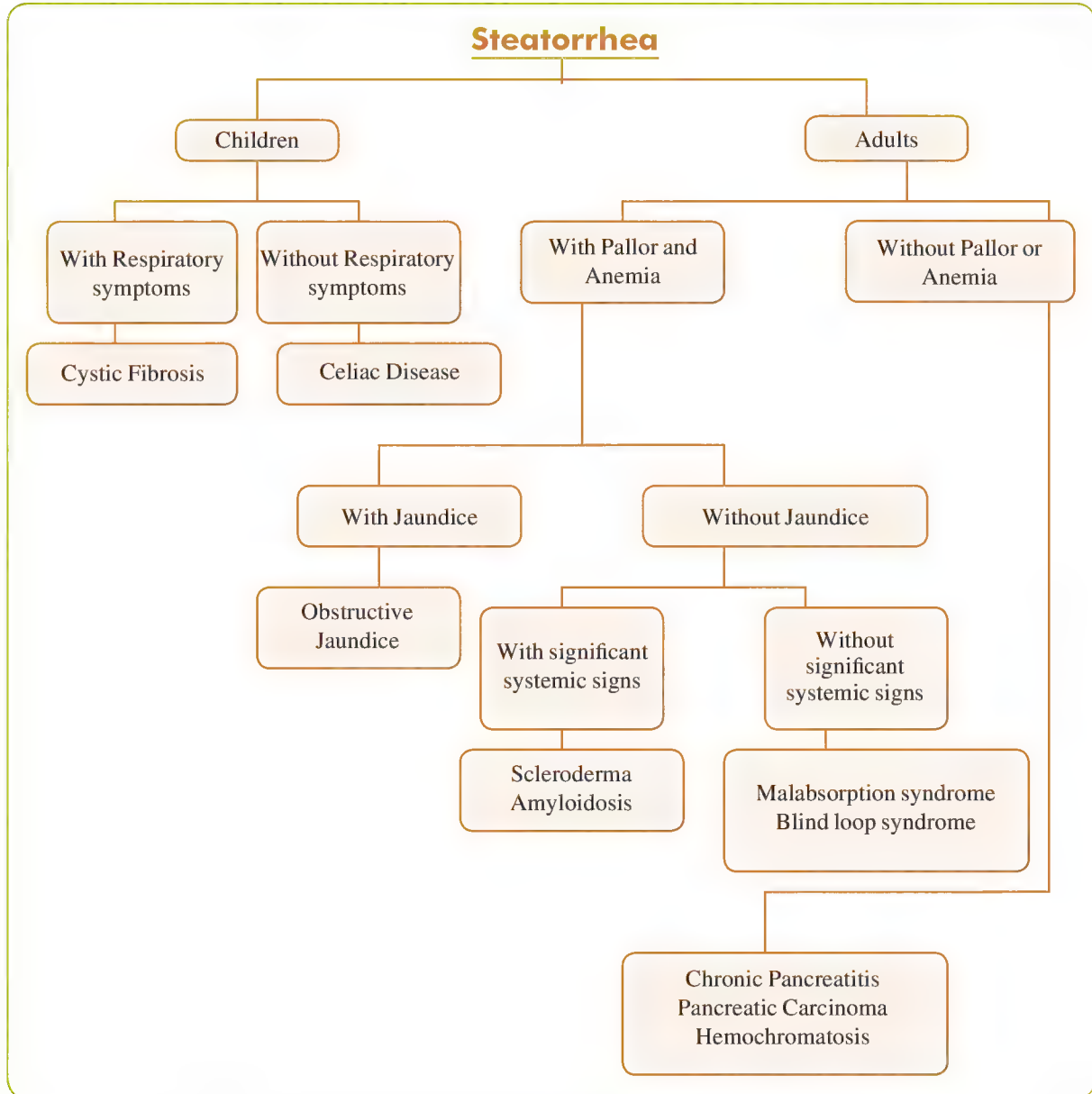


Figure "13": Flow Chart Diagram For Differential Diagnosis of Steatorrhea

• Steatorrhea

Passage of large greasy, voluminous stool difficult to be flushed from WC due to increased air content

Refer for further evaluation.

• Coeliac Disease (Gluten – Sensitive Enteropathy):

It is a condition in which there is an inflammation of the jejunal mucosa which improves when the patient is treated with gluten-free diet

Gluten is contained in cereals; wheat, rye and barley.

Treatment:

- o Gluten-free diet
- o Replace: iron, folic acid, calcium
- o Pneumococcal vaccination /5 years

• Blind Loop Syndrome (Bacterial Overgrowth)

Treatment:

Rotating courses of antibiotics such as Metronidazole, Tetracycline or Ciprofloxacin

• Hemochromatosis

Inherited disorder characterized by excess iron deposition in various organs leading to functional organic failure

Clinical picture:

- o Bronzed skin
- o Hepatomegaly
- o Diabetes Mellitus
- o Hypogonadism
- o Heart failure and arrhythmias
- o Arthropathy

Screening: all 1st. degree family members must be screened

Treatment: refer for proper diagnosis & management

• Pancreatitis:

Acute pancreatitis: inflammation of a normal pancreas and can return to normal after resolution of episode

Chronic after resolution of continuing inflammation with irreversible structural changes

Causes of acute pancreatitis:

- o Gall stones
- o Alcohol
- o Infections: mumps, Coxsackie B
- o Drugs: corticosteroid, estrogen, azathioprim
- o Hyperlipidemia
- o Idiopathic

Causes of chronic pancreatitis:

- o Alcohol
 - o Cystic fibrosis
 - o Hypercalcemia
 - o Idiopathic
- Treatment:** refer for proper diagnosis & treatment

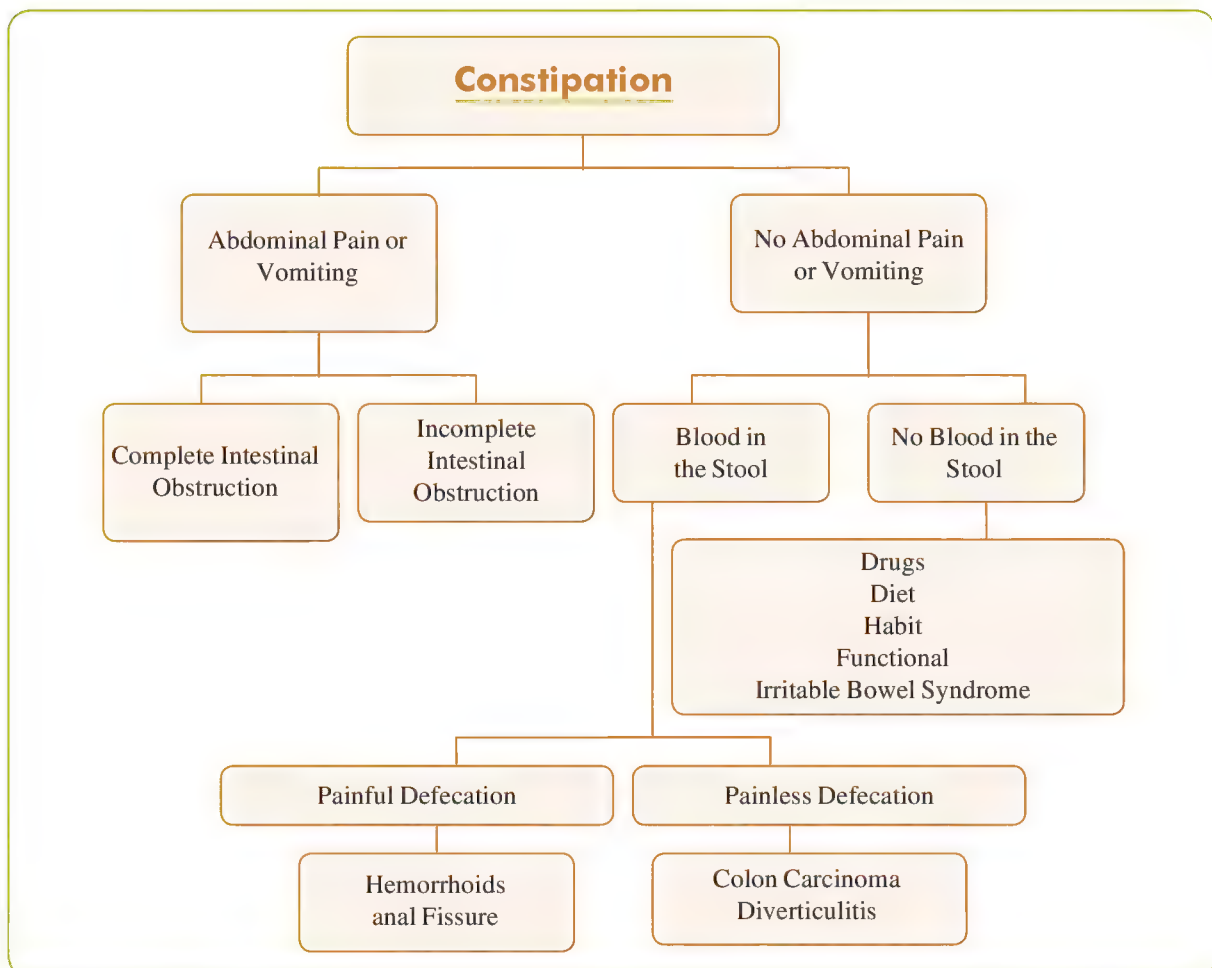


Figure "14": Flow Chart Diagram For Differential Diagnosis of Constipation

- **Constipation** is infrequent passage of hard stools

Always do PR (per rectal) examination

Refer:

- o Abnormal PR examination
- o Presence of blood in Stools

- o Significant weight loss

- o Significant anaemia or high ESR

- o Constipation with abdominal pain refer to emergency unit

- **Intestinal obstruction, hemorrhoids & anal fissure** → see surgery section

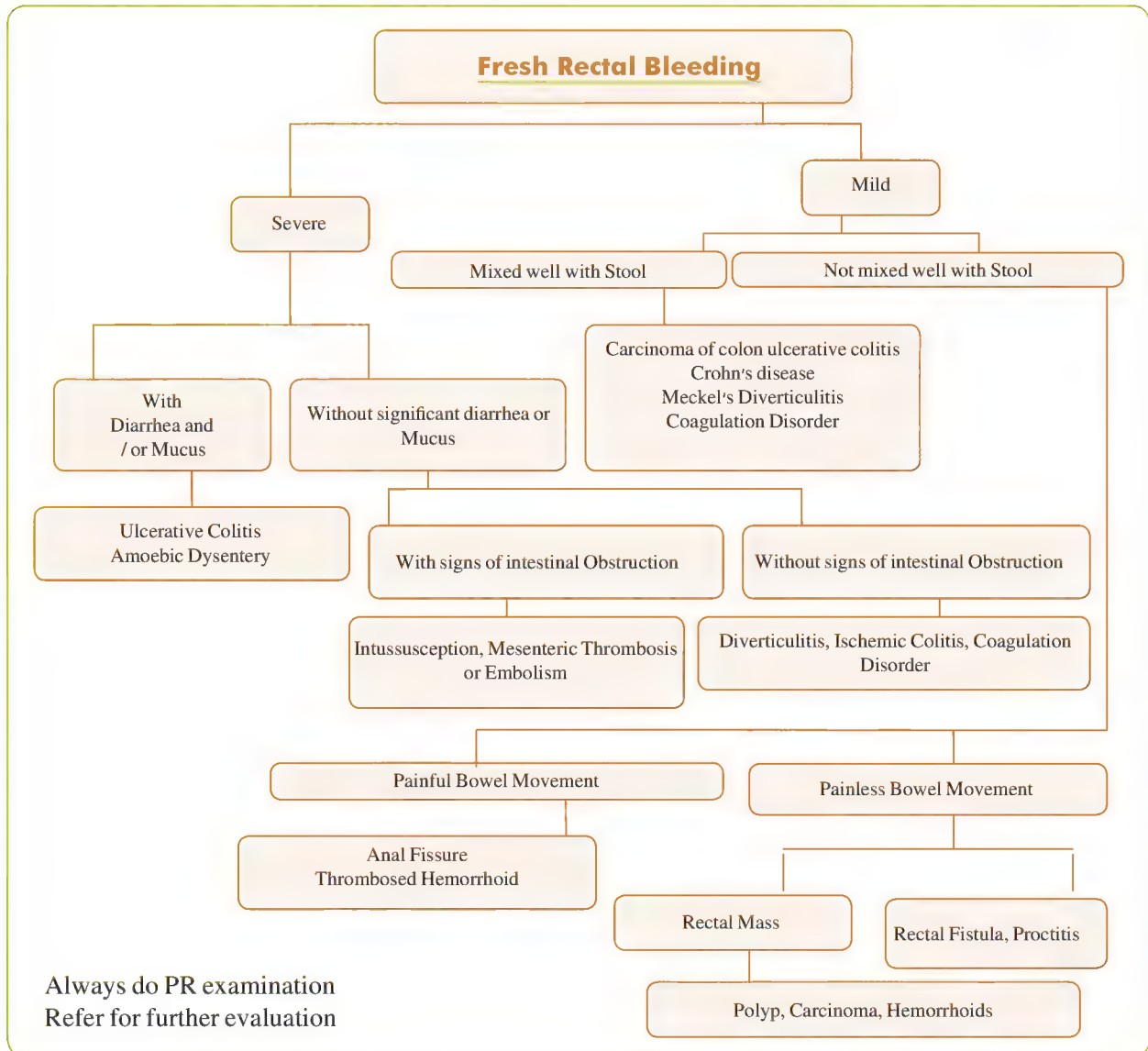


Figure "15": Flow Chart Diagram For Differential Diagnosis of Fresh Rectal Bleeding

Acute Abdominal Pain

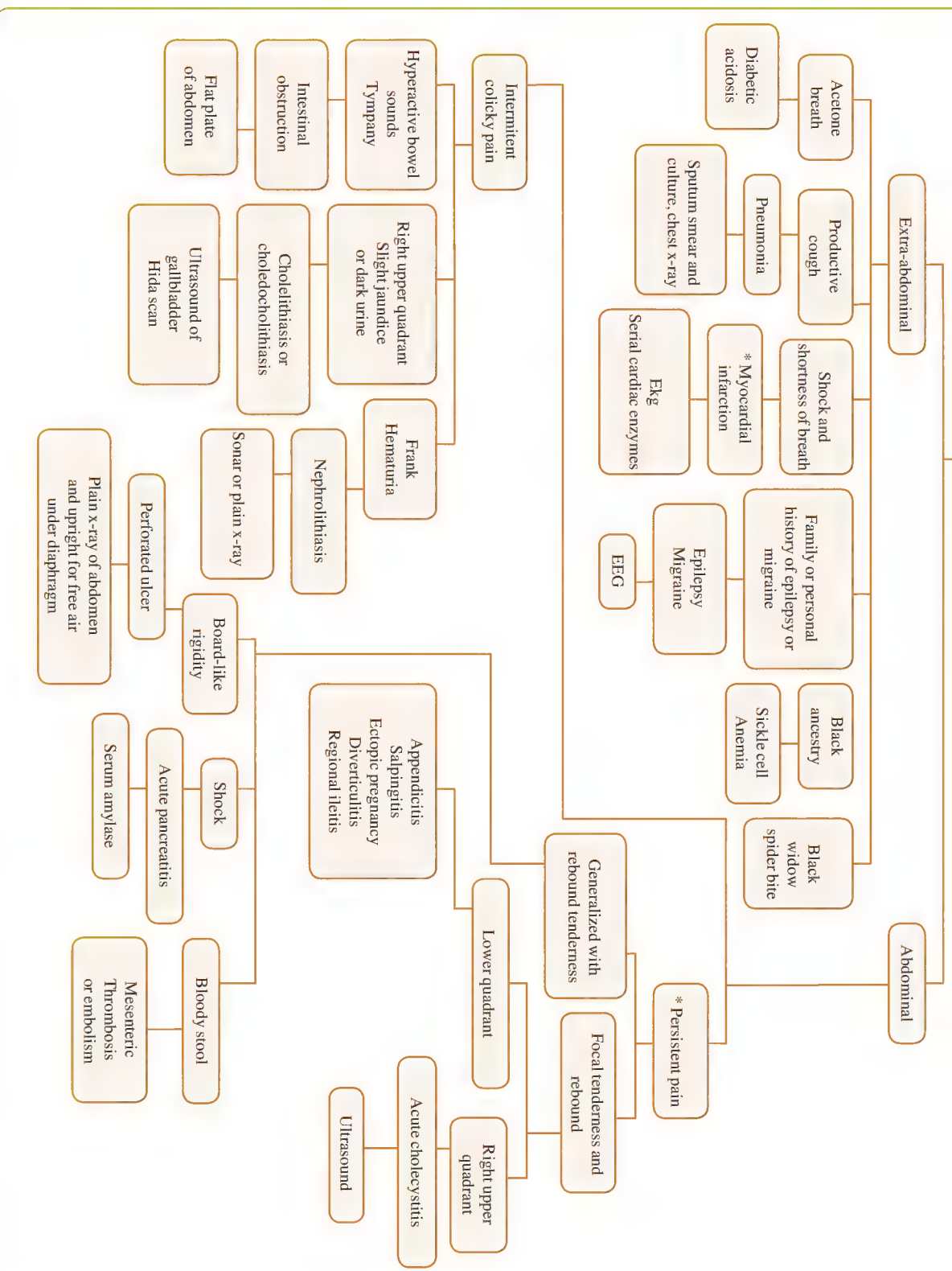


Figure: "16": Flow Chart Diagram For Differential Diagnosis of Acute Abdominal Pain

Other Causes of Acute Abdominal Pain:

Familial Mediterranean Fever

Porphyria

Familial hypertriglyceridemia

In medical causes of acute abdomen there is NO rigidity or rebound tenderness.

N.B. **Familial Mediterranean Fever** is characterized by recurrent attacks of

- Fever
- Arthritis: monoarticular
- Serositis: abd.pain due to peritonitis or pleurisy
- Attacks last for up to 1 week

Refer to Confirm Diagnosis

Appendicitis produces more gradual onset of pain and pain may be made worse by movement.

Vomiting may accompany any acute abdominal pain but, if persistent, it suggests an obstructive lesion of the gut.

All other cases with rigidity and /or rebound tenderness should be referred to surgical emergency unit.

A Sudden Onset Of Severe Pain Suggests:

- Perforation e.g.doudenal ulcer
- Rupture e.g. of an aneurysm
- Torsion e.g. of an ovarian cyst
- Acute pancreatitis

Refer immediately to emergency unit

Colicky Pain Can Be Due to an Obstruction of Gut

- Biliary system
- Urogenital system
- Or uterus.

These will probably initially require conservative management along with analgesics and antispasmodic.

If colicky pain changed into constant pain → inflammation supervene. This will be supported by:

- Raised temperature.
- Tachycardia
- And/or raised white cell count

Add broad spectrum antibiotics, IV line and transfer to emergency unit

Back Pain Suggests:

- Pancreatitis
- Rupture of an aortic aneurysm
- Renal tract disease

Diabetic Ketoacidosis (refer to Diabetic section)

Myocardial infarction: refer to chest pain & IHD section

- Give sublingual nitrate tablet every 5 min for 3 tablets
- Chew aspirin tablet
- Refer to emergency unit

Sickle Cell Crisis:

- IV fluid
- Oxygen
- Antibiotics
- Adequate analgesia
- After attack give pneumococcal vaccine
- Hemophilis influenza vaccine
- Refer for further evaluation

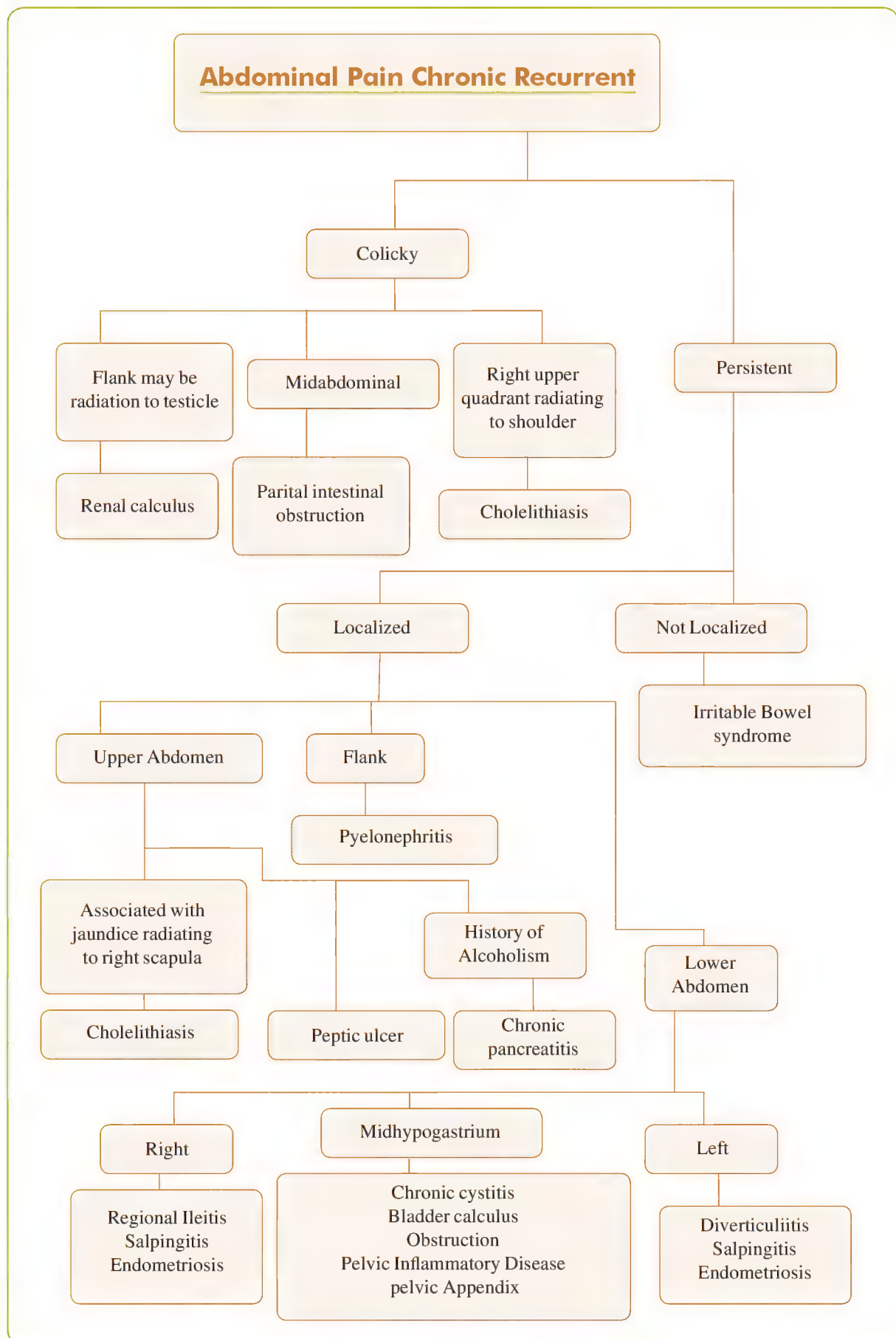


Figure "17": Flow Chart Diagram For Differential Diagnosis of Abdominal Pain Chronic & Recurrent

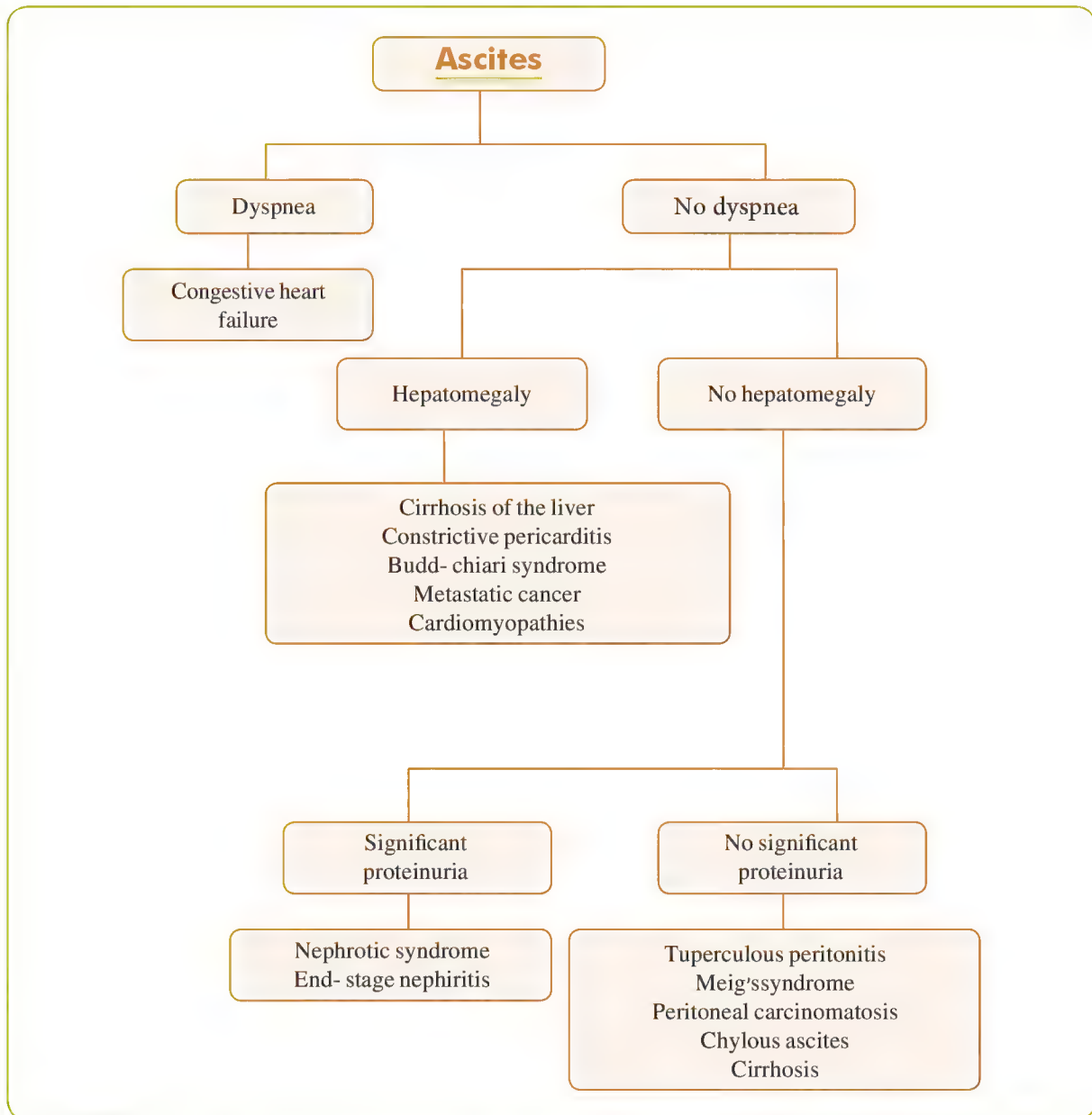


Figure "18": Flow Chart Diagram For Differential Diagnosis of Ascites

Ascites

Ascites is accumulation of fluid in peritoneal cavity

Ascites May Be:

Part of generalized oedema:

- CHF
- Liver Cirrhosis
- Renal
- Nutritional deficiencies

Due to Local Cause:

- TB peritonitis

- Peritoneal carcinomatosis
- Chylous ascites

Treatment:

- Bed rest
- Dietary sodium restriction
- Fluid restriction
- Diuretics: spironolactone 100mg/day
- You can add frusemide 20-40mg/day
- Treatment of underlying conditions
- If response is poor (<0.7kg weight loss in 24 hours), refer for further evaluation & further treatment.

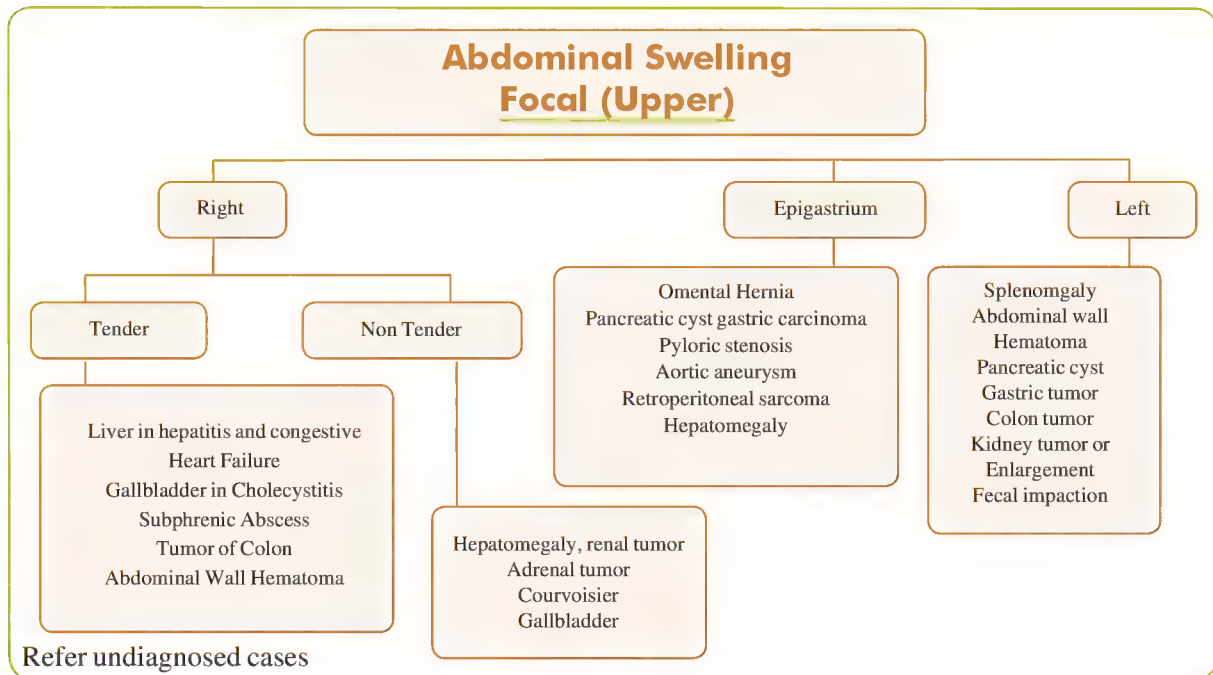


Figure "19": Flow Chart Diagram For Differential Diagnosis of Abdominal Swelling Focal (Upper)

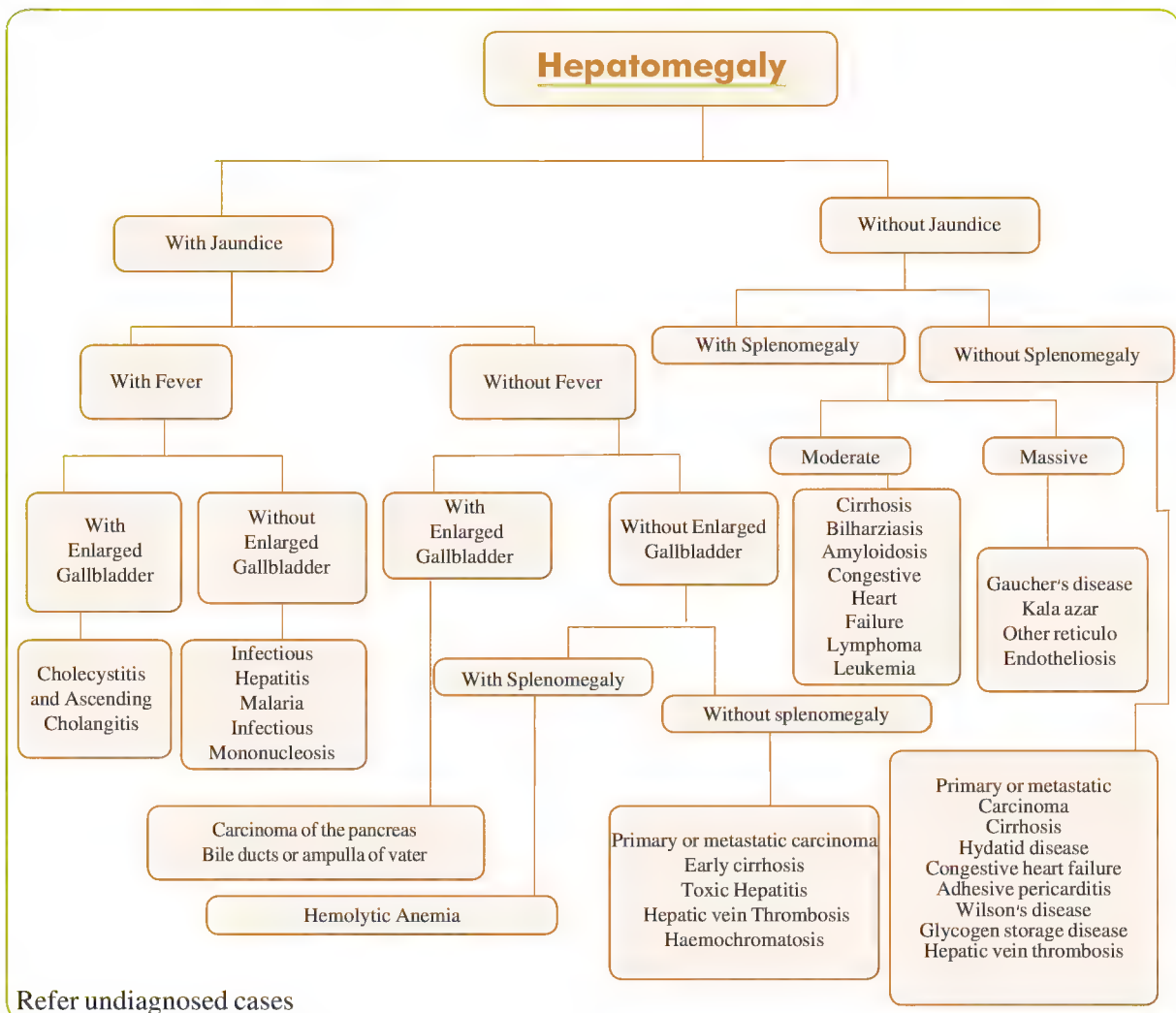


Figure "20": Flow Chart Diagram For Differential Diagnosis of Hepatomegaly

• Infectious Mononucleosis:

It is caused by Epstein-Barr virus. It occurs in adolescents & young adults. It is transmitted by droplet infection.

Clinical Picture:

- o Fever, headache, malaise, sore throat
- o Rash especially if receive ampicillin
- o Cervical lymphadenopathy & splenomegaly

Diagnosis: CBC: atypical mononuclear cells

Refer for monospot test

Treatment: no specific treatment & recovery is rapid

- **Kala Azar:** visceral leishmaniasis
- **Wilson's disease** (hepatolenticular degeneration):

It is an inborn error of copper metabolism results in copper deposition in various organs

Clinical Features:

- o Liver disease
- o Extra pyramidal & dementia
- o Kayser Feisher ring
- o Hemolytic anemia

Treatment: refer for proper diagnosis & treatment by penicillamine

• Leptospirosis

It is a zoonosis caused by spirochete

Clinical Picture:

- o Severe illness consists of jaundice
- o Hemorrhage
- o Renal impairment

Treatment: oral doxycycline or erythromycin

Refer for proper diagnosis & treatment

• Brucellosis (Malta Fever)

It is zoonosis; it spreads by ingestion of raw milk from infected cattle.

Clinical Picture:

- o Insidious onset with malaise, headache, weakness, myalgia & night sweats.
- o Intermittent fever.
- o Lymphadenopathy, hepatosplenomegaly.

- o Arthritis.

Refer for diagnosis.

Treatment:

Doxycycline 200mg/d & rifampicin 600-900mg /d for 6 weeks.

Doxycycline: For treatment of Brucellosis (Malta fever)

Adults; 200mg/d for 6 weeks

Children: - Under 8 years: Not recommended

- Over 8 years: 5mg/kg divided in 2 doses on first day, followed by 2.5mg/kg/day once or

- divided on two doses on subsequent days

Rifampicin: For treatment of Brucellosis (Malta fever)

Adult Dose: 600-900mg /d for 6 weeks orally or IV

Pediatric Dose: 5-20mg/kg/d orally or IV once daily or divided every 12h

• Bacterial Endocarditis (Infective Endocarditis, IE)

It is an infection of the endocardium.

Prophylaxis: see rheumatic fever section.

Clinical picture of IE is varied & non-specific, so, diagnosis must be always suspected when fever & murmur are present.

Refer for diagnosis.

• Polycythemia Rubra Vera:

It is stem cell diagnosis leading to excessive proliferation of erythroid, myeloid & megakaryocytic progenitor cells.

o **Malaria** : see helminthes section.

o **TB** : see T.B. section.

o **SLE & Felty syndrome:** see Joint section.

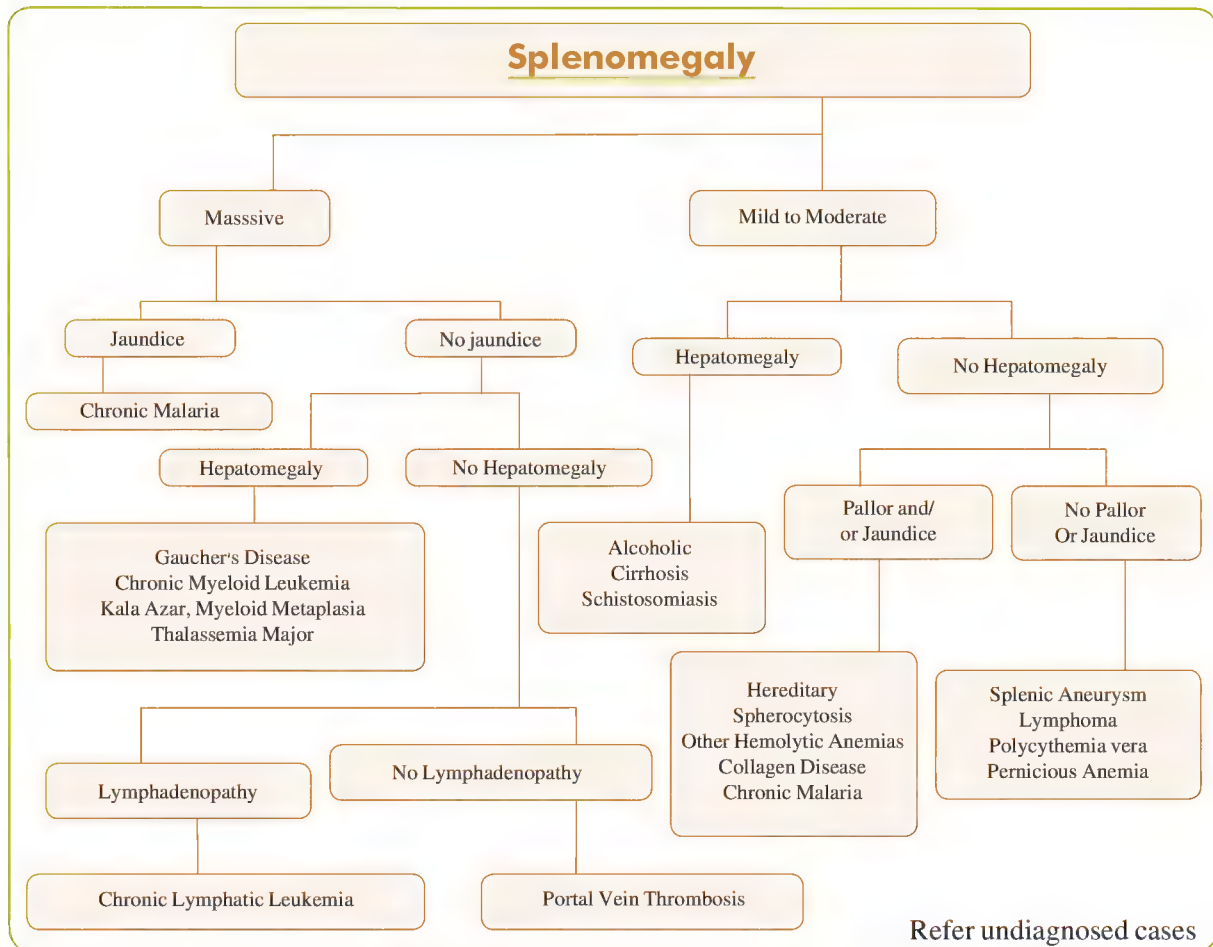


Figure "21": Flow Chart Diagram For Differential Diagnosis of Splenomegaly

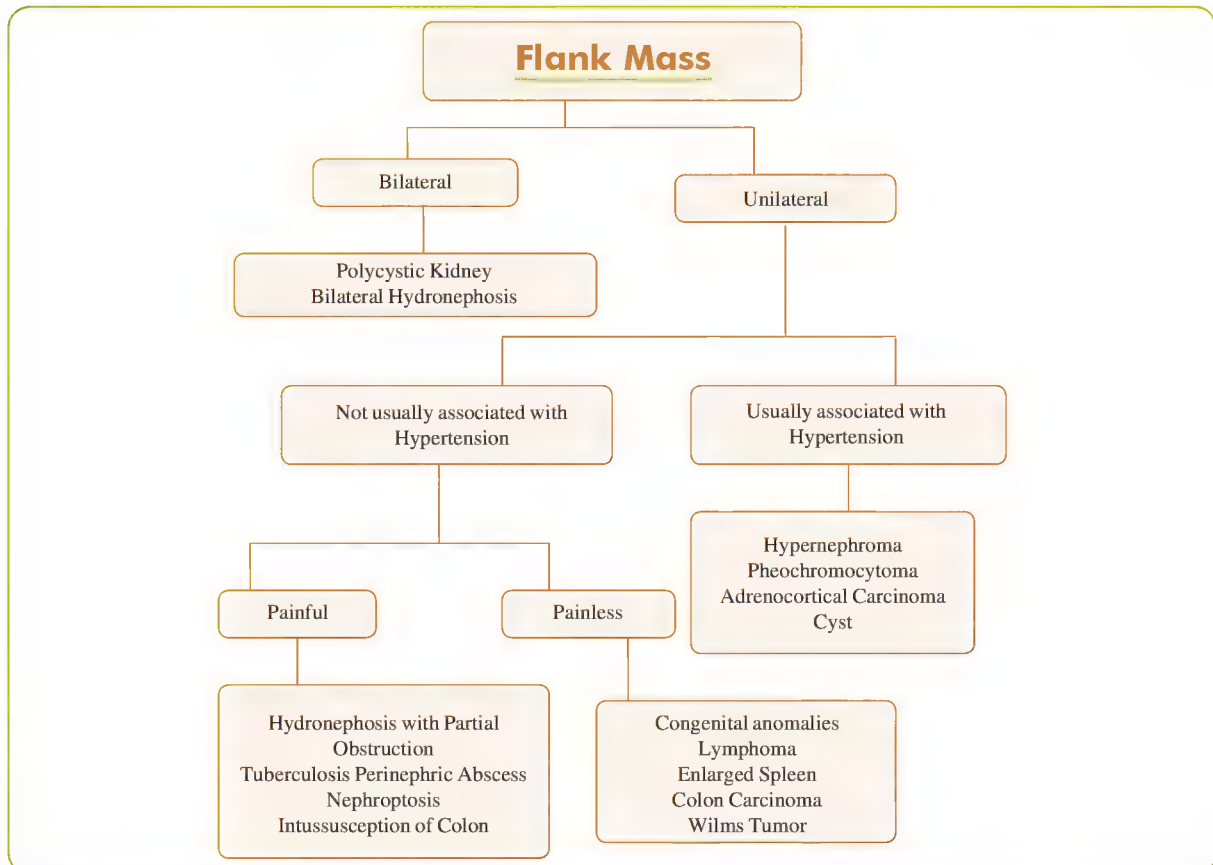


Figure "22": Flow Chart Diagram For Differential Diagnosis of Flank Mass

- **Polycystic Kidney**

Autosomal dominant disorders usually presents in adults.

Characterised by: multiple renal cysts

- **Clinical picture:**

Loin Pain, Hematuria

- **Hypertension**

Subarachnoid haemorrhage (rupture berry aneurysm)

Refer for further evaluation

- **Hydronephrosis**

It is secondary to urinary tract obstruction

Refer

- **Wilms's Tumour:**

It is seen in the first 3 years of life & may be bilateral

Refer

- **Hypernephroma (Renal Cell Carcinoma)**

It is the most common renal tumour in adult

Refer for further evaluation

- **Pheochromocytoma**

- It is tumour of sympathetic nervous system. It leads to secondary hypertension

Refer

- **Flank Pain**

- **Pyleonehpritis:** see in UT infection

Skin Infection & Allergy

6

Skin Infection & Allergy

Dermatology

Skin reflects the health condition of the body.

1. Most systemic diseases cause skin changes.
2. Some drugs produce skin changes (drug eruption). Withdrawal of the drug usually results in clearance of the eruption within two weeks.

Elementary Lesions of the Skin

1. Macule:

It is a well defined area of discoloration of the skin neither elevated above nor depressed below the level of the skin. e.g., Freckles. Macule is seen but not felt.

2. Papule:

palpable elevation of the skin varying in size from 1-5mm in diameter.

3. Nodule:

similar to papule but deep seated. Its size is larger than papule. It involves both the epidermis & dermis.

4. Vesicle:

The same size as the papule but contains fluid.

5. Bulla:

It is a cavity filled with tissue fluids. It is larger than a vesicle.

6. Pustule:

Vesicle containing pus.

7. Wheal:

Edema of the corium. It is the elementary lesion or Urticaria.

8. Scale:

Imperfectly keratinized horny cells adherent together e.g. dandruff.

9. Burrow:

Channel in the horny layer, burrowed by the sarcoptes scabiei.

10. Plaque:

area of abnormal skin or mucus membrane, flat, elevated or depressed below the level of the skin. It is formed by coalescence of either papules or nodules.

11. Crust:

Dried fluid; blood, serum or pus.

12. Scar:

healing of injured skin by connective tissue.

13. Fissure:

Crack in epidermis.

14. Ulcer:

Crack in epidermis & dermis.

15. Erosion

Loss of epithelium down to the basal cell layer.

Bacterial Skin Infection

1. Staphylococcus infection

20% of people are carriers; in nose, axilla & perineum

Disease	Description	Treatment
1-Impetigo (Staph. aureus) May occur any where Common on face & scalp Spreads rapidly & contagious.	Thin walled vesicle, rupture easily, to leave a yellow crusted lesion.	<ul style="list-style-type: none"> • Avoid spread to other children (no sharing of towels & clothes) • Some schools prohibit attendance until lesions are cleared. • Treatment: <ul style="list-style-type: none"> o Topical application of antiseptic lotions, o local topical antibiotics; Fucidin cream o Give oral antibiotic for widespread cases; Erythromycin or amoxicillin.

1. Folliculitis

Infection affecting hair follicles, presents as pustules. Management: exclude diabetes; treat with topical and/or systemic antibiotics.

2. Scalded skin syndrome

(Toxic epidermal necrolysis) is usually in infants. It is characterized by shedding of sheets of skin. It may follow impetigo. Management: Emergency pediatric admission.

2. Streptococcal infection

It is carried in the throat and/or nose.

1. Cellulitis & erysipelas

It appears as painful, tender red area with well defined edge. Often the area is swollen & may blister.

Management: Oral penicillin V or erythromycin for 7-14 days. Severe infections need hospitalization.

2. Streptococcal Intertrigo

It is chronic dermatitis with fissuring & crusting. It occurs in between folds of skin. It is common in infants, and obese individuals.

Skin Lesions Caused by Specific Bacterial Infections

1. T.B. Cutis (look at T.B.)

2. Leprosy

It is chronic disease, slowly progressive, contagious, caused by mycobacterium leprae. The target cell for the lepra bacillus is the Schwann cell of the nerve sheath.

Types:

Lepromatous Leprosy
Tuberculoid Leprosy
Borderline Leprosy
Intermediate Leprosy

The full blown picture is decreasing.

Do Not Forget

When you suspect refer to specialist.

Viral Skin Lesions

1. Viral warts (Verrucae) are caused by human papilloma virus.

The virus is transmitted by direct contact.

Certain types are associated with infection at different sites. Genital warts are associated with cervical dysplasia.

Treatments look at minor surgery.

2. Molluscum contagiosum:

Glistening hemispherical umbilicated papule. Treatment as virus warts

3. Herpes simplex

- It is common acute vesicular eruption.
- It can affect eye, mouth, vulva, vagina etc...
- Gingivo stomatitis
- Vulvo vaginitis
- Kerato conjunctivitis
- Eczema Herpeticorum
- Dissiminated form
- Recurrent type

Treatment:

General:

- Give antibiotic to control secondary infection.
- Give analgesics for the pain.

Local:

- Antiseptic solution
- Topical application of I.D.U.(5-iodo-2-dioxy-uridine) As 0.1% eye drops in corneal lesions

4. Chicken pox (Varicella)

Look at IMCI

5. Herpes zoster

Acute vesicular eruption caused by a neurotropic virus related to that of Varicella & is located in the posterior root ganglia & posterior nerve roots.

Types depend upon the nerve involved & severity of the lesion.

Treatment:

Refer to specialist, every case should be investigated.

Fungal Infection

1. Dermatophyte Infection (Tinea)

It affects skin, nails or hairs.

- Tinea corporis affects trunk or limbs (ringworm of the body) (Tinea Circinata).
- Tinea pedis affects feet (athletic foot).
- Tinea cruris affect groin.
- Tinea capitis affects hair & scalp.(ring worm of the scalp)

Good rule

Assume that any bald area or scaly patch in the scalp of a child is due to ring worm till proved otherwise.

Tinea unguium affects nails, toenails & fingernails.

Diagnosis is by clinical picture. Skin scraping or nail clippings may confirm diagnosis.

Treatment:

General: Griseofulvin in extensive types (refer to specialist)

Local:

Whitefield ointment

Tincture iodine 2-5%

2. Candidiasis (Candidosis) (Monilliasis)

It is uniform commensal of the mouth & gut which produces opportunistic infection.

Risk factors

- Moist
- Opposing skin folds
- Obesity
- Diabetes mellitus
- Neonates
- Pregnancy
- Poor hygiene
- Humid environment
- Wet work occupation
- Use of broad spectrum antibiotics.

Presentation of Candidiasis:

- Genital infection
- Intertrigo (submammary, inguinal & axillary folds)
- Oral (sore mouth) (Thrush)
- Nappy Candidiasis
- Chronic paronychia
- Systemic Candidiasis (occurs in immunosuppressed individuals)

Management

1. Topical treatment

Nystatin or Miconazole are available in many forms as cream, pessaries, spray, powder, oral pastilles or gels.

2. Systemic treatment use for recurrent,

extensive, systemic or resistant infection & nail or scalp infection. Oral fluconazole 50mg once/day for two weeks is effective for oral, mucocutaneous or systemic Candidiasis.

Higher doses may be needed if immunosuppressed, seek specialist advice.

A single oral dose of 150mg fluconazole is effective for genital Candidiasis.

Terbinafine (lamisil) is for Dermatophyte infection.

3. General measures, keep body folds separated & dry, minimize hot & humid conditions & keep mouth & tongue clean by brushing twice a day.

Skin Diseases Caused by Parasites

1- Pediculosis

There are two species of human lice:

a-Phthirus pubis, it affects the pubic hair

Clinical picture: continuous intense itching in the infested area. Blood pigments & signs of secondary infection.

Treatment

Good hygiene

Shaving of the hair

2% ammoniated mercury ointment

10% benzyle benzoate emulsion

b-Pediculosis humanus (PH)

-PH capitis i.e. it affects the scalp

-PH corporis i.e. it affects the body

Clinical picture:

Continuous itching

Secondary infection

Regional lymphadenitis

In case of scalp affection nits can be identified cemented to hair

Treatment:

Good hygiene, health education & avoidance of crowd

10% DDT in liquid paraffin applied for one night

Repeated every 3 weeks.

2-Scabies

The scabies mite (*sarcoptes scabiei*) is 1/2mm long & spread by physical contact. Symptoms appear 4-6 weeks after infection.

- Treat with scabicide e.g., malathion lotion. All close contacts need treatment.
- Advise the patients to launder all worn clothes & bedding after application.
- Give oral antihistamines for symptomatic relief.

Insect bites

Immediately after the bite, remove any sting present in the wound; often no further treatment is needed.

If anaphylaxis occurs, give subcutaneous adrenaline, oxygen & refer to emergency department of the nearest hospital.

If severe local reaction apply ice pack, give oral antihistamine 4-6 hourly.

Health education: to remove the source of insects.

Eczema

Allergic itchy dermatitis caused by factor characterized by making vesicles

Types of eczema:

- Contact dermatitis
- Atopic dermatitis
- Seborrheic dermatitis
- Pompholyx
- Dry (Aseptic)(eczema craquele)
- Varicose
- Dandruff
- Discoid (nummular)

Management

1. Refer if uncertain diagnosis or resistant to treatment.
2. Emollients: e.g. aqueous cream, emulsifying ointment, bath emollients -use regularly on skin & as soap substitute.
3. Topical steroids
4. Antibiotics: for infected eczema-oral or topical.
5. Antihistamines at night to decrease desire for itching.

Urticaria & Angioedema

It is transient itchy reaction of skin characterized by formation of wheals.

Types:

- Acute Urticaria
- Chronic Urticaria
- Physical Urticaria
- Contact Urticaria
- Drug induced Urticaria
- Hereditary Angioedema
- Urticaria with systemic disease
- Urticaria with pregnancy

Management

- Eliminate any underlying cause if possible
- Avoid provoking factors
- Antihistamines
- Corticosteroids
- Diet-dietary salicylates aggravate chronic Urticaria, azo dyes & benzoic preservatives produce exacerbation -refer to dietician.

Pityriasis

Pityriasis rosea is an acute cutaneous eruption of limited course & minimal symptoms.

1. The eruption develops suddenly by the appearance of the Herald patch(a well defined rounded or oval plaque rosy red & covered by a fine small adherent scales on its periphery
2. After few days up to two weeks the secondary eruption appears in crops(They are oval patches, dull pink with clear center & collarets scaly margin)

Treatment:

Antihistamines.

Calamine lotion, Topical steroid

Psoriasis

- Psoriasis is a chronic non-infectious inflammatory skin condition characterized by well -demarcated erythematous plaques topped by silvery scales.
- Classification according to distribution:
- Scalp psoriasis
- Flexural psoriasis
- Penile psoriasis
- Ungual psoriasis (nail psoriasis)
- Psoriasis of palm & sole (hyperkeratotic)
- Psoriasis-arthritis

- Pustular psoriasis

Management:

- Health education, all patients need explanation of the condition & possible treatment options.
- Refer to dermatology
- Follow up

Lichen Planus

- It is inflammatory, itchy dermatoses.
- It is characterized by scaly erythematous eruption.

Types:

- Lichen planus annularis
- Lichen planus hypertrophicus
- Lichen planus linearis
- Lichen planus moniliformis
- Lichen planus atrophicus
- Lichen planus bullosus
- Lichen planus atropicus (actinicus)

Management:

- It is self limiting in most cases.
- Topical steroids are used
- Refer to specialist

Acne Vulgaris

(seborrhoeic eruption)

Predisposing factors

- Anxiety
- Menstrual irregularities
- Mild anemia
- Hypovitaminosis A
- Toxic absorption of septic foci
- Constipation
- Hormonal dysfunction

Types

- Comedo type (black or white heads)
- Papular type
- Pustular type
- Indurated type
- Excoriated
- Occupational (exposure to chlorinated organic compounds)
- Drug induced (e.g. iodide, bromide, anticoagulants)
- Cystic type
- Mixed type
- Conglomerate type
- Keloidal acne
- Atrophied acne

Treatment:

Good health

Personal hygiene

Exercise

Balanced diet, avoid excess fat

Topical:

Lotions as 2% sulphur in calamine

Sulphur soap

Ultraviolet ray

Systemic:

- Tetracycline in small repeated doses on prolonged time
- Long acting sulpha
- Vitamin A

Autogenous vaccine (if staff infection)-

Estrogen-

Surgery: small incision to express contents-

Dermablation for residual scars

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